SEQUENCE LISTING

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<120> MATERIALS AND METHODS RELATING TO LIPID METABOLISM

<130> 28110/35915A

<150> US 60/197,137
<151> 2000-04-14

<150> US 09/714,936
<151> 2000-11-17

<150> US 09/667,298
<151> 2000-09-22

<150> US 09/631,451
<151> 2000-08-03

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<151> 2000-06-20

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<170> PatentIn version 3.0

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gct gcc gtg ctc acc tgg gct ctg gct ctt ctt tca gcg ttt tcg gcc   105
Ala Ala Val Leu Thr Trp Ala Leu Ala Leu Leu Ser Ala Phe Ser Ala
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acc cag gca cgg aaa ggc ttc tgg gac tac ttc agc cag acc agc ggg      153
Thr Gln Ala Arg Lys Gly Phe Trp Asp Tyr Phe Ser Gln Thr Ser Gly
                25              30              35

gac aaa ggc agg gtg gag cag atc cat cag cag aag atg gct cgc gag      201
Asp Lys Gly Arg Val Glu Gln Ile His Gln Gln Lys Met Ala Arg Glu
            40              45              50

ccc gcg acc ctg aaa gac agc ctt gag caa gac ctc aac aat atg aac      249
Pro Ala Thr Leu Lys Asp Ser Leu Glu Gln Asp Leu Asn Asn Met Asn
            55              60              65

aag ttc ctg gaa aag ctg agg cct ctg agt ggg agc gag gct cct cgg      297
Lys Phe Leu Glu Lys Leu Arg Pro Leu Ser Gly Ser Glu Ala Pro Arg
    70              75              80

ctc cca cag gac ccg gtg ggc atg cgg cgg cag ctg cag gag gag ttg      345
Leu Pro Gln Asp Pro Val Gly Met Arg Arg Gln Leu Gln Glu Glu Leu
85              90              95              100

gag gag gtg aag gct cgc ctc cag ccc tac atg gca gag gcg cac gag      393
Glu Glu Val Lys Ala Arg Leu Gln Pro Tyr Met Ala Glu Ala His Glu
                105             110             115

ctg gtg ggc tgg aat ttg gag ggc ttg cgg cag caa ctg aag ccc tac      441
Leu Val Gly Trp Asn Leu Glu Gly Leu Arg Gln Gln Leu Lys Pro Tyr
                120             125             130

acg atg gat ctg atg gag cag gtg gcc ctg cgc gtg cag gag ctg cag      489
Thr Met Asp Leu Met Glu Gln Val Ala Leu Arg Val Gln Glu Leu Gln
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gag cag ttg cgc gtg gtg ggg gaa gac acc aag gcc cag ttg ctg ggg      537
Glu Gln Leu Arg Val Val Gly Glu Asp Thr Lys Ala Gln Leu Leu Gly
    150             155             160

ggc gtg gac gag gct tgg gct ttg ctg cag gga ctg cag agc cgc gtg      585
Gly Val Asp Glu Ala Trp Ala Leu Leu Gln Gly Leu Gln Ser Arg Val
165             170             175             180

gtg cac cac acc ggc cgc ttc aaa gag ctc ttc cac cca tac gcc gag      633
Val His His Thr Gly Arg Phe Lys Glu Leu Phe His Pro Tyr Ala Glu
                185             190             195

agc ctg gtg agc ggc atc ggg cgc cac gtg cag gag ctg cac cgc agt      681
Ser Leu Val Ser Gly Ile Gly Arg His Val Gln Glu Leu His Arg Ser
                200             205             210

gtg gct ccg cac gcc ccc gcc agc ccc gcg cgc ctc agt cgc tgc gtg      729
Val Ala Pro His Ala Pro Ala Ser Pro Ala Arg Leu Ser Arg Cys Val
            215             220             225

cag gtg ctc tcc cgg aag ctc acg ctc aag gcc aag gcc ctg cac gca      777
Gln Val Leu Ser Arg Lys Leu Thr Leu Lys Ala Lys Ala Leu His Ala
            230             235             240

cgc atc cag cag aac ctg gac cag ctg cgc gaa gag ctc agc aga gcc      825
Arg Ile Gln Gln Asn Leu Asp Gln Leu Arg Glu Glu Leu Ser Arg Ala
245             250             255             260

ttt gca ggc act ggg act gag gaa ggg gcc ggc ccg gac ccc cag atg      873
Phe Ala Gly Thr Gly Thr Glu Glu Gly Ala Gly Pro Asp Pro Gln Met
            265             270             275
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ctc tcc gag gag gtg cgc cag cga ctt cag gct ttc cgc cag gac acc       921
Leu Ser Glu Glu Val Arg Gln Arg Leu Gln Ala Phe Arg Gln Asp Thr
            280             ·           285                 290

tac ctg cag ata gct gcc ttc act cgc gcc atc gac cag gag act gag       969
Tyr Leu Gln Ile Ala Ala Phe Thr Arg Ala Ile Asp Gln Glu Thr Glu
            295                 300             305

gag gtc cag cag cag ctg gcg cca cct cca cca ggc cac agt gcc ttc      1017
Glu Val Gln Gln Gln Leu Ala Pro Pro Pro Pro Gly His Ser Ala Phe
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gcc cca gag ttt caa caa aca gac agt ggc aag gtt ctg agc aag ctg      1065
Ala Pro Glu Phe Gln Gln Thr Asp Ser Gly Lys Val Leu Ser Lys Leu
325                 330                 335                 340

cag gcc cgt ctg gat gac ctg tgg gaa gac atc act cac agc ctt cat      1113
Gln Ala Arg Leu Asp Asp Leu Trp Glu Asp Ile Thr His Ser Leu His
                345                 350                 355

gac cag ggc cac agc cat ctg ggg gac ccc tgaggatcta cctgcccagg       1163
Asp Gln Gly His Ser His Leu Gly Asp Pro
                360                 365

cccattccca gctccttgtc tggggagcct tggctctgag cctctagcat ggttcagtcc   1223

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aggggctgct gtctcctgca tatccagcct cctgcgactc cccaatctgg atgcattaca   1343

ttcaccaggc tttgcaaacc cagcctccca gtgctcattt gggaatgctc atgagttact   1403

ccattcaagg gtgagggagt agggagggag aggcaccatg catgtgggtg attatctgca   1463

agcctgtttg ccgtgatgct ggaagcctgt gccactacat cctggagttt ggctctagtc   1523

acttctggct gcctggtggc cactgctaca gctggtccac agagaggagc acttgtctcc   1583

ccagggctgc catggcagct atcaggggaa tagaagggag aaagagaata tcatggggag   1643

aacatgtgat ggtgtgtgaa tatccctgct ggctctgatg ctggtgggta cgaaaggtgt   1703

gggctgggat aagagagggc agagcccatg ttttctgaca taactctaca cctanataag   1763

ggactgaacc cttccaactg cgggagctcc ttaaacccct ctggggagca tactgggggc   1823

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Gln Thr Ser Gly Asp Lys Gly Arg Val Glu Gln Ile His Gln Gln Lys
        35   40   45

Met Ala Arg Glu Pro Ala Thr Leu Lys Asp Ser Leu Glu Gln Asp Leu
        50   55   60

Asn Asn Met Asn Lys Phe Leu Glu Lys Leu Arg Pro Leu Ser Gly Ser
65   70   75   80

Glu Ala Pro Arg Leu Pro Gln Asp Pro Val Gly Met Arg Arg Gln Leu
              85   90   95

Gln Glu Glu Leu Glu Glu Val Lys Ala Arg Leu Gln Pro Tyr Met Ala
            100   105   110

Glu Ala His Glu Leu Val Gly Trp Asn Leu Glu Gly Leu Arg Gln Gln
            115   120   125

Leu Lys Pro Tyr Thr Met Asp Leu Met Glu Gln Val Ala Leu Arg Val
        130   135   140

Gln Glu Leu Gln Glu Gln Leu Arg Val Val Gly Glu Asp Thr Lys Ala
145   150   155   160

Gln Leu Leu Gly Gly Val Asp Glu Ala Trp Ala Leu Leu Gln Gly Leu
            165   170   175

Gln Ser Arg Val Val His His Thr Gly Arg Phe Lys Glu Leu Phe His
            180   185   190

Pro Tyr Ala Glu Ser Leu Val Ser Gly Ile Gly Arg His Val Gln Glu
        195   200   205

Leu His Arg Ser Val Ala Pro His Ala Pro Ala Ser Pro Ala Arg Leu
        210   215   220

Ser Arg Cys Val Gln Val Leu Ser Arg Lys Leu Thr Leu Lys Ala Lys
225   230   235   240

Ala Leu His Ala Arg Ile Gln Gln Asn Leu Asp Gln Leu Arg Glu Glu
            245   250   255

Leu Ser Arg Ala Phe Ala Gly Thr Gly Thr Glu Glu Gly Ala Gly Pro
        260   265   270

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Asp Pro Gln Met Leu Ser Glu Glu Val Arg Gln Arg Leu Gln Ala Phe
        275                 280                 285


Arg Gln Asp Thr Tyr Leu Gln Ile Ala Ala Phe Thr Arg Ala Ile Asp
    290                 295                 300


Gln Glu Thr Glu Glu Val Gln Gln Gln Leu Ala Pro Pro Pro Pro Gly
305                 310                 315                 320


His Ser Ala Phe Ala Pro Glu Phe Gln Gln Thr Asp Ser Gly Lys Val
                325                 330                 335


Leu Ser Lys Leu Gln Ala Arg Leu Asp Asp Leu Trp Glu Asp Ile Thr
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His Ser Leu His Asp Gln Gly His Ser His Leu Gly Asp Pro
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tcaacattca gcagaggccc cagatcagcg tctgagccag gccaacaatg accaaggagg     180

atg gga tcc tgg gtg cag ctc atc aca agc gtc ggg gtg cag caa aac     228
Met Gly Ser Trp Val Gln Leu Ile Thr Ser Val Gly Val Gln Gln Asn
1               5                   10                  15

cat cca ggc tgg aca gtg gct gga cag ttc caa gaa aag aaa cgc ttc     276
His Pro Gly Trp Thr Val Ala Gly Gln Phe Gln Glu Lys Lys Arg Phe
            20                  25                  30

act gaa gaa gtc att gaa tac ttc cag aag aaa gtt agc cca gtg cat     324
Thr Glu Glu Val Ile Glu Tyr Phe Gln Lys Lys Val Ser Pro Val His
        35                  40                  45

ctg aaa atc ctg ctg act agc gat gaa gcc tgg aag aga ttc gtg cgt     372
Leu Lys Ile Leu Leu Thr Ser Asp Glu Ala Trp Lys Arg Phe Val Arg
    50                  55                  60

gtg gct gaa ttg ccc agg gaa gaa gca gat gct ctc tat gaa gct ctg     420
Val Ala Glu Leu Pro Arg Glu Glu Ala Asp Ala Leu Tyr Glu Ala Leu
65                  70                  75                  80

aag aat ctt aca cca tat gtg gct att gag gac aaa gac atg cag caa     468
Lys Asn Leu Thr Pro Tyr Val Ala Ile Glu Asp Lys Asp Met Gln Gln
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aaa gaa cag cag ttt agg gag tgg ttt ttg aaa gag ttt cct caa atc        516
Lys Glu Gln Gln Phe Arg Glu Trp Phe Leu Lys Glu Phe Pro Gln Ile
            100                   105                   110

aga tgg aag att cag gag tcc ata gaa agg ctt cgt gtc att gca aat        564
Arg Trp Lys Ile Gln Glu Ser Ile Glu Arg Leu Arg Val Ile Ala Asn
            115                   120                   125

gag att gaa aag gtc cac aga ggc tgc gtc atc gcc aat gtg gtg tct        612
Glu Ile Glu Lys Val His Arg Gly Cys Val Ile Ala Asn Val Val Ser
            130                   135                   140

ggc tcc act ggc atc ctg tct gtc att ggc gtt atg ttg gca cca ttt        660
Gly Ser Thr Gly Ile Leu Ser Val Ile Gly Val Met Leu Ala Pro Phe
145                   150                   155                   160

aca gca ggg ctg agc ctg agc att act gca gct ggg gta ggg ctg gga        708
Thr Ala Gly Leu Ser Leu Ser Ile Thr Ala Ala Gly Val Gly Leu Gly
                165                   170                   175

ata gca tct gcc acg gct ggg atc gcc tcc agc atc gtg gag aac aca        756
Ile Ala Ser Ala Thr Ala Gly Ile Ala Ser Ser Ile Val Glu Asn Thr
                180                   185                   190

tac aca agg tca gca gaa ctc aca gcc agc agg ctg act gca acc agc        804
Tyr Thr Arg Ser Ala Glu Leu Thr Ala Ser Arg Leu Thr Ala Thr Ser
                195                   200                   205

act gac caa ttg gag gca tta agg gac att ctg cat gac atc aca ccc        852
Thr Asp Gln Leu Glu Ala Leu Arg Asp Ile Leu His Asp Ile Thr Pro
            210                   215                   220

aat gtg ctt tcc ttt gca ctt gat ttt gac gaa gcc aca aaa atg att        900
Asn Val Leu Ser Phe Ala Leu Asp Phe Asp Glu Ala Thr Lys Met Ile
225                   230                   235                   240

gcg aat gat gtc cat aca ctc agg aga tct aaa gcc act gtt gga cgc        948
Ala Asn Asp Val His Thr Leu Arg Arg Ser Lys Ala Thr Val Gly Arg
                245                   250                   255

cct ttg att gct tgg cga tat gta cct ata aat gtt gtt gag aca ctg        996
Pro Leu Ile Ala Trp Arg Tyr Val Pro Ile Asn Val Val Glu Thr Leu
                260                   265                   270

aga aca cgt ggg gcc ccc acc cgg ata gtg aga aaa gta gcc cgg aac       1044
Arg Thr Arg Gly Ala Pro Thr Arg Ile Val Arg Lys Val Ala Arg Asn
            275                   280                   285

ctg ggc aag gcc act tca ggt gtc ctt gtt gtg ctg gat gta gtc aac       1092
Leu Gly Lys Ala Thr Ser Gly Val Leu Val Val Leu Asp Val Val Asn
            290                   295                   300

ctt gtg caa gac tca ctg gac ttg cac aag ggg gca aaa tcc gag tct       1140
Leu Val Gln Asp Ser Leu Asp Leu His Lys Gly Ala Lys Ser Glu Ser
305                   310                   315                   320

gct gag tcgctgaggc agtgggctca ggagctggag gagaatctca atgagctcac       1196
Ala Glu

ccatatccat cagagtctaa aagcaggcta ggcccaattg ttgcgggaag tcagggaccc    1256
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caaacggagg gactggctga agccatggca gaagaacgtg gattgtgaag atttcatgga   1316

catttattag ttccccaaat taatactttt ataatttcct atgcctgtct ttaccgcaat   1376

ctctaaacac caattgtgaa gatttcatgg acacttatca cttccccaa   1425

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His Pro Gly Trp Thr Val Ala Gly Gln Phe Gln Glu Lys Lys Arg Phe
            20   25   30

Thr Glu Glu Val Ile Glu Tyr Phe Gln Lys Lys Val Ser Pro Val His
        35   40   45

Leu Lys Ile Leu Leu Thr Ser Asp Glu Ala Trp Lys Arg Phe Val Arg
    50   55   60

Val Ala Glu Leu Pro Arg Glu Glu Ala Asp Ala Leu Tyr Glu Ala Leu
65   70   75   80

Lys Asn Leu Thr Pro Tyr Val Ala Ile Glu Asp Lys Asp Met Gln Gln
                85   90   95

Lys Glu Gln Gln Phe Arg Glu Trp Phe Leu Lys Glu Phe Pro Gln Ile
            100   105   110

Arg Trp Lys Ile Gln Glu Ser Ile Glu Arg Leu Arg Val Ile Ala Asn
            115   120   125

Glu Ile Glu Lys Val His Arg Gly Cys Val Ile Ala Asn Val Val Ser
    130   135   140

Gly Ser Thr Gly Ile Leu Ser Val Ile Gly Val Met Leu Ala Pro Phe
145   150   155   160

Thr Ala Gly Leu Ser Leu Ser Ile Thr Ala Ala Gly Val Gly Leu Gly
                165   170   175

Ile Ala Ser Ala Thr Ala Gly Ile Ala Ser Ser Ile Val Glu Asn Thr
            180   185   190

Tyr Thr Arg Ser Ala Glu Leu Thr Ala Ser Arg Leu Thr Ala Thr Ser

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        195                     200                     205


Thr Asp Gln Leu Glu Ala Leu Arg Asp Ile Leu His Asp Ile Thr Pro
    210                     215                 220


Asn Val Leu Ser Phe Ala Leu Asp Phe Asp Glu Ala Thr Lys Met Ile
225                     230                 235                 240


Ala Asn Asp Val His Thr Leu Arg Arg Ser Lys Ala Thr Val Gly Arg
                245                     250                 255


Pro Leu Ile Ala Trp Arg Tyr Val Pro Ile Asn Val Val Glu Thr Leu
                260                     265                 270


Arg Thr Arg Gly Ala Pro Thr Arg Ile Val Arg Lys Val Ala Arg Asn
                275                     280                 285


Leu Gly Lys Ala Thr Ser Gly Val Leu Val Val Leu Asp Val Val Asn
    290                     295                 300


Leu Val Gln Asp Ser Leu Asp Leu His Lys Gly Ala Lys Ser Glu Ser
305                     310                 315                 320


Ala Glu


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                    1               5                   10

atg gct ggt gtg att cca atc cag ggc ggg atc ctg aac ctg aac aag       98
Met Ala Gly Val Ile Pro Ile Gln Gly Gly Ile Leu Asn Leu Asn Lys
            15                  20                  25

atg gtc aag caa gtg act ggg aaa atg ccc atc ctc tcc tac tgg ccc      146
Met Val Lys Gln Val Thr Gly Lys Met Pro Ile Leu Ser Tyr Trp Pro
        30                  35                  40

tac ggc tgt cac tgc gga cta ggt ggc aga ggc caa ccc aaa gat gcc      194
Tyr Gly Cys His Cys Gly Leu Gly Gly Arg Gly Gln Pro Lys Asp Ala
    45                  50                  55

acg gac tgg tgc tgc cag acc cat gac tgc tgc tat gac cac ctg aag      242
Thr Asp Trp Cys Cys Gln Thr His Asp Cys Cys Tyr Asp His Leu Lys
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      60                     65                     70                     75
acc cag ggg tgc ggc atc tac aag gac tat tac aga tac aac ttt tcc        290
Thr Gln Gly Cys Gly Ile Tyr Lys Asp Tyr Tyr Arg Tyr Asn Phe Ser
                80                      85                     90

cag ggg aac atc cac tgc tct gac aag gga agc tgg tgt gag cag cag        338
Gln Gly Asn Ile His Cys Ser Asp Lys Gly Ser Trp Cys Glu Gln Gln
            95                     100                    105

ctg tgt gcc tgt gac aag gag gtg gcc ttc tgc ctg aag cgc aac ctg        386
Leu Cys Ala Cys Asp Lys Glu Val Ala Phe Cys Leu Lys Arg Asn Leu
        110                     115                    120

gac acc tac cag aag cga ctg cgt ttc tac tgg cgg ccc cac tgc cgg        434
Asp Thr Tyr Gln Lys Arg Leu Arg Phe Tyr Trp Arg Pro His Cys Arg
        125                     130                    135

ggg cag acc cct ggg tgc tagaagccca caccctctac cctgttcctc             482
Gly Gln Thr Pro Gly Cys
140                 145

agcatggagc tctggcatcc ccacctcagt atctaacctg aaccagcctg gcttttcaaa     542

cactccgggg ggaggtagtc ccagcctccc ccggaaccct ctaccaatgc cttctgacct     602

tctgaagctt tccgaatcct cccagttgag gcagtagctg tgtcctctga gggtggatgg     662

gaatcttggg agaagcccaa gcaagggagc cctcagaggt ggtgtttgga ccaaagcatc     722

ggggtggggg aggggtctgc cgctgtcccc cacctgctgg cccccttgtc cttcctcacc     782

ccctccaata tagtctcgga gctacaaccg cagcagccac tataaagggc aatattgatc     842

tttctgtcca tgtggctcta tcttttaaaa cctcaaggcc ctccactgtc ctaagataaa     902

gcctctcata ggcactgggg accctgcaca gtctggccat gtgaccctct ccccaggcaa     962

gctctgaagt ccctgcaggt ggaggccatg cctgtcttaa actcagttgc atccctggtg     1022

cccaaagcaa caccagaacc aagaaggagc tccataaatc cttcttgggt gaagcctaga     1082

caaagccgcc aggtcttgtg gctccaggca ccagagcctt gagtactttc tcctgcctcc     1142

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tgatccccac ctcctcaggg tcaaagggct actttctgga agtctcccca ggctgactcc      1262

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1               5                   10                  15

Pro Ile Gln Gly Gly Ile Leu Asn Leu Asn Lys Met Val Lys Gln Val
            20                  25                  30

Thr Gly Lys Met Pro Ile Leu Ser Tyr Trp Pro Tyr Gly Cys His Cys
        35                  40                  45

Gly Leu Gly Gly Arg Gly Gln Pro Lys Asp Ala Thr Asp Trp Cys Cys
    50                  55                  60

Gln Thr His Asp Cys Cys Tyr Asp His Leu Lys Thr Gln Gly Cys Gly
65                  70                  75                  80

Ile Tyr Lys Asp Tyr Tyr Arg Tyr Asn Phe Ser Gln Gly Asn Ile His
                85                  90                  95

Cys Ser Asp Lys Gly Ser Trp Cys Glu Gln Gln Leu Cys Ala Cys Asp
            100                 105                 110

Lys Glu Val Ala Phe Cys Leu Lys Arg Asn Leu Asp Thr Tyr Gln Lys
        115                 120                 125

Arg Leu Arg Phe Tyr Trp Arg Pro His Cys Arg Gly Gln Thr Pro Gly
    130                 135                 140

Cys
145
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gctggtggaa cagtgggtg atg gcg tcc ctg ctg caa gac cag ctg acc act      172
                      Met Ala Ser Leu Leu Gln Asp Gln Leu Thr Thr
                       1               5                  10

gat cag gac ttg ctg ctg atg cag gaa ggc atg ccg atg cgc aag gtg      220
Asp Gln Asp Leu Leu Leu Met Gln Glu Gly Met Pro Met Arg Lys Val
              15                  20                  25

agg tcc aaa agc tgg aag aag cta aga tac ttc aga ctt cag aat gac      268
Arg Ser Lys Ser Trp Lys Lys Leu Arg Tyr Phe Arg Leu Gln Asn Asp
          30                  35                  40

ggc atg aca gtc tgg cat gca cgg cag gcc agg ggc agt gcc aag ccc      316
Gly Met Thr Val Trp His Ala Arg Gln Ala Arg Gly Ser Ala Lys Pro
      45                  50                  55

agc ttc tca atc tct gat gtg gag aca ata cgt aat ggc cat gat tcc      364
Ser Phe Ser Ile Ser Asp Val Glu Thr Ile Arg Asn Gly His Asp Ser
60                  65                  70                  75

gag ttg ctg cgt agc ctg gca gag gag ctc ccc ctg gag cag ggc ttc      412
Glu Leu Leu Arg Ser Leu Ala Glu Glu Leu Pro Leu Glu Gln Gly Phe
                  80                  85                  90

acc att gtc ttc cat ggc cgc cgc tcc aac ctg gac ctg atg gcc aac      460
Thr Ile Val Phe His Gly Arg Arg Ser Asn Leu Asp Leu Met Ala Asn
                  95                  100                 105

agt gtt gag gag gcc cag ata tgg atg cga ggg ctc cag ctg ttg gtg      508
Ser Val Glu Glu Ala Gln Ile Trp Met Arg Gly Leu Gln Leu Leu Val
              110                 115                 120

gat ctt gtc acc agc atg gac cat cag gag cgc ctg gac caa tgg ctg      556
Asp Leu Val Thr Ser Met Asp His Gln Glu Arg Leu Asp Gln Trp Leu
          125                 130                 135

agc gat tgg ttt caa cgt gga gac aaa aat cag gat ggt aag atg agt      604
Ser Asp Trp Phe Gln Arg Gly Asp Lys Asn Gln Asp Gly Lys Met Ser
140                 145                 150                 155

ttc caa gaa gtt cag cgg tta ttg cac cta atg aat gtg gaa atg gac      652
Phe Gln Glu Val Gln Arg Leu Leu His Leu Met Asn Val Glu Met Asp
                  160                 165                 170

caa gaa tat gcc ttc agt ctt ttt cag gca gca gac acg tcc cag tct      700
Gln Glu Tyr Ala Phe Ser Leu Phe Gln Ala Ala Asp Thr Ser Gln Ser
                  175                 180                 185

gga acc ctg gaa gga gaa gaa ttc gta cag ttc tat aag gca ttg act      748
Gly Thr Leu Glu Gly Glu Glu Phe Val Gln Phe Tyr Lys Ala Leu Thr
              190                 195                 200

aaa cgt gct gag gtg cag gaa ctg ttt gaa agt ttt tca gct gat ggg      796
Lys Arg Ala Glu Val Gln Glu Leu Phe Glu Ser Phe Ser Ala Asp Gly
          205                 210                 215
```

```
cag aag ctg act ctg ctg gaa ttt ttg gat ttc ctc caa gag gag cag        844
Gln Lys Leu Thr Leu Leu Glu Phe Leu Asp Phe Leu Gln Glu Glu Gln
220             225             230             235

aag gag aga gac tgc acc tct gag ctt gct ctg gaa ctc att gac cgc        892
Lys Glu Arg Asp Cys Thr Ser Glu Leu Ala Leu Glu Leu Ile Asp Arg
                240             245             250

tat gaa cct tca gac agt ggc aaa ctg cgg cat gtg ccg agt atg gat        940
Tyr Glu Pro Ser Asp Ser Gly Lys Leu Arg His Val Pro Ser Met Asp
                255             260             265

ggc ttc ctc agc tac ctc tgc tct aag gat gga gac atc ttc aac cca        988
Gly Phe Leu Ser Tyr Leu Cys Ser Lys Asp Gly Asp Ile Phe Asn Pro
            270             275             280

gcc tgc ctc ccc atc tat cag gat atg act caa ccc ctg aac cac tac       1036
Ala Cys Leu Pro Ile Tyr Gln Asp Met Thr Gln Pro Leu Asn His Tyr
        285             290             295

ttc atc tgc tct tct cat aac acc tac cta gtg ggg gac cag ctt tgc       1084
Phe Ile Cys Ser Ser His Asn Thr Tyr Leu Val Gly Asp Gln Leu Cys
300             305             310             315

ggc cag agc agc gtc gag gga tat ata cgg gcc ctg aag cgg ggg tgc       1132
Gly Gln Ser Ser Val Glu Gly Tyr Ile Arg Ala Leu Lys Arg Gly Cys
                320             325             330

cgc tgc gtg gag gtg gat gta tgg gat gga cct agc ggg gaa cct gtc       1180
Arg Cys Val Glu Val Asp Val Trp Asp Gly Pro Ser Gly Glu Pro Val
                335             340             345

gtt tac cac gga cac acc ctg acc tcc cgc atc ctg ttc aaa gat gtc       1228
Val Tyr His Gly His Thr Leu Thr Ser Arg Ile Leu Phe Lys Asp Val
            350             355             360

gtg gcc aca gta gca cag tat gcc ttc cag aca tca gac tac cca gtc       1276
Val Ala Thr Val Ala Gln Tyr Ala Phe Gln Thr Ser Asp Tyr Pro Val
        365             370             375

atc ttg tcc ctg gag acc cac tgc agc tgg gag cag cag cag acc atg       1324
Ile Leu Ser Leu Glu Thr His Cys Ser Trp Glu Gln Gln Gln Thr Met
380             385             390             395

gcc cgt cat ctg act gag atc ctg ggg gag cag ctg ctg agc acc acc       1372
Ala Arg His Leu Thr Glu Ile Leu Gly Glu Gln Leu Leu Ser Thr Thr
                400             405             410

ttg gat ggg gtg ctg ccc act cag ctg ccc tcg cct gag gag ctt cgg       1420
Leu Asp Gly Val Leu Pro Thr Gln Leu Pro Ser Pro Glu Glu Leu Arg
            415             420             425

agg aag atc ctg gtg aag ggg aag aag tta aca ctt gag gaa gac ctg       1468
Arg Lys Ile Leu Val Lys Gly Lys Lys Leu Thr Leu Glu Glu Asp Leu
            430             435             440

gaa tat gag gaa gag gaa gca gaa cct gag ttg gaa gag tca gaa ttg       1516
Glu Tyr Glu Glu Glu Glu Ala Glu Pro Glu Leu Glu Glu Ser Glu Leu
    445             450             455

gcg ctg gag tcc cag ttt gag act gag cct gag ccc cag gag cag aac       1564
Ala Leu Glu Ser Gln Phe Glu Thr Glu Pro Glu Pro Gln Glu Gln Asn
460             465             470             475
```

```
ctt cag aat aag gac aaa aag aag aaa tcc aag ccc atc ttg tgt cca       1612
Leu Gln Asn Lys Asp Lys Lys Lys Lys Ser Lys Pro Ile Leu Cys Pro
                480             485             490

gcc ctc tct tcc ctg gtt atc tac ttg aag tct gtc tca ttc cgc agc       1660
Ala Leu Ser Ser Leu Val Ile Tyr Leu Lys Ser Val Ser Phe Arg Ser
            495             500             505

ttc aca cat tca aag gag cac tac cac ttc tac gag ata tca tct ttc       1708
Phe Thr His Ser Lys Glu His Tyr His Phe Tyr Glu Ile Ser Ser Phe
            510             515             520

tct gaa acc aag gcc aag cgc ctc atc aag gag gct ggc aat gag ttt       1756
Ser Glu Thr Lys Ala Lys Arg Leu Ile Lys Glu Ala Gly Asn Glu Phe
        525             530             535

gtg cag cac aat act cgg cag tta agc cgt gtg tat ccc agc ggc ctg       1804
Val Gln His Asn Thr Arg Gln Leu Ser Arg Val Tyr Pro Ser Gly Leu
540             545             550             555

agg aca ggc tct tcc atc tac aac ccg cag gga tac                       1840
Arg Thr Gly Ser Ser Ile Tyr Asn Pro Gln Gly Tyr
            560             565


<210>   8
<211>   567
<212>   PRT
<213>   Homo sapiens

<400>   8

Met Ala Ser Leu Leu Gln Asp Gln Leu Thr Thr Asp Gln Asp Leu Leu
1               5                   10                  15


Leu Met Gln Glu Gly Met Pro Met Arg Lys Val Arg Ser Lys Ser Trp
                20                  25                  30


Lys Lys Leu Arg Tyr Phe Arg Leu Gln Asn Asp Gly Met Thr Val Trp
            35                  40                  45


His Ala Arg Gln Ala Arg Gly Ser Ala Lys Pro Ser Phe Ser Ile Ser
        50                  55                  60


Asp Val Glu Thr Ile Arg Asn Gly His Asp Ser Glu Leu Leu Arg Ser
65                  70                  75                  80


Leu Ala Glu Glu Leu Pro Leu Glu Gln Gly Phe Thr Ile Val Phe His
                85                  90                  95


Gly Arg Arg Ser Asn Leu Asp Leu Met Ala Asn Ser Val Glu Glu Ala
                100                 105                 110


Gln Ile Trp Met Arg Gly Leu Gln Leu Leu Val Asp Leu Val Thr Ser
            115                 120                 125
```

Met Asp His Gln Glu Arg Leu Asp Gln Trp Leu Ser Asp Trp Phe Gln
    130   135   140

Arg Gly Asp Lys Asn Gln Asp Gly Lys Met Ser Phe Gln Glu Val Gln
145   150   155   160

Arg Leu Leu His Leu Met Asn Val Glu Met Asp Gln Glu Tyr Ala Phe
                165   170   175

Ser Leu Phe Gln Ala Ala Asp Thr Ser Gln Ser Gly Thr Leu Glu Gly
                180   185   190

Glu Glu Phe Val Gln Phe Tyr Lys Ala Leu Thr Lys Arg Ala Glu Val
                195   200   205

Gln Glu Leu Phe Glu Ser Phe Ser Ala Asp Gly Gln Lys Leu Thr Leu
    210   215   220

Leu Glu Phe Leu Asp Phe Leu Gln Glu Glu Gln Lys Glu Arg Asp Cys
225   230   235   240

Thr Ser Glu Leu Ala Leu Glu Leu Ile Asp Arg Tyr Glu Pro Ser Asp
                245   250   255

Ser Gly Lys Leu Arg His Val Pro Ser Met Asp Gly Phe Leu Ser Tyr
                260   265   270

Leu Cys Ser Lys Asp Gly Asp Ile Phe Asn Pro Ala Cys Leu Pro Ile
            275   280   285

Tyr Gln Asp Met Thr Gln Pro Leu Asn His Tyr Phe Ile Cys Ser Ser
    290   295   300

His Asn Thr Tyr Leu Val Gly Asp Gln Leu Cys Gly Gln Ser Ser Val
305   310   315   320

Glu Gly Tyr Ile Arg Ala Leu Lys Arg Gly Cys Arg Cys Val Glu Val
            325   330   335

Asp Val Trp Asp Gly Pro Ser Gly Glu Pro Val Val Tyr His Gly His
            340   345   350

Thr Leu Thr Ser Arg Ile Leu Phe Lys Asp Val Val Ala Thr Val Ala
            355   360   365

Gln Tyr Ala Phe Gln Thr Ser Asp Tyr Pro Val Ile Leu Ser Leu Glu
    370   375   380

```
Thr His Cys Ser Trp Glu Gln Gln Gln Thr Met Ala Arg His Leu Thr
385                 390             395                 400

Glu Ile Leu Gly Glu Gln Leu Leu Ser Thr Thr Leu Asp Gly Val Leu
                405             410                 415

Pro Thr Gln Leu Pro Ser Pro Glu Glu Leu Arg Arg Lys Ile Leu Val
                420             425             430

Lys Gly Lys Lys Leu Thr Leu Glu Glu Asp Leu Glu Tyr Glu Glu Glu
                435             440             445

Glu Ala Glu Pro Glu Leu Glu Glu Ser Glu Leu Ala Leu Glu Ser Gln
    450             455             460

Phe Glu Thr Glu Pro Glu Pro Gln Glu Gln Asn Leu Gln Asn Lys Asp
465             470             475             480

Lys Lys Lys Lys Ser Lys Pro Ile Leu Cys Pro Ala Leu Ser Ser Leu
                485             490             495

Val Ile Tyr Leu Lys Ser Val Ser Phe Arg Ser Phe Thr His Ser Lys
                500             505             510

Glu His Tyr His Phe Tyr Glu Ile Ser Ser Phe Ser Glu Thr Lys Ala
            515             520             525

Lys Arg Leu Ile Lys Glu Ala Gly Asn Glu Phe Val Gln His Asn Thr
    530             535             540

Arg Gln Leu Ser Arg Val Tyr Pro Ser Gly Leu Arg Thr Gly Ser Ser
545             550             555             560

Ile Tyr Asn Pro Gln Gly Tyr
            565


<210>  9
<211>  1384
<212>  DNA
<213>  Homo sapiens

<400>  9
ccaactaagc ttgcctaatt tgcttcagaa ttggaagagg gaattgcagc aggaaaatat      60

gtgaagagtt tttaaaccca caaattcttc ttactttaga attagttgtt acattggcag     120

gaaaaaataa atgcagatgt tggaccatgt tggaaacctt gtcaagacag tggattgtct     180

cacacagaat ggaaatgtgg cttctgattc tggtggcgta tatgttccag agaaatgtga     240

attcagtaca tatgccaact aaagctgtgg acccagaagc attcatgaat attagtgaaa     300
```

```
tcatccaaca tcaaggctat ccctgtgagg aatatgaagt cgcaactgaa gatgggtata      360

tcctttctgt taacaggatt cctcgaggcc tagtgcaacc taagaagaca ggttccaggc      420

ctgtggtgtt actgcagcat ggcctagttg gaggtgctag caactggatt tccaacctgc      480

ccaacaatag cctgggcttc attctggcag atgctggttt tgacgtgtgg atggggaaca      540

gcaggggaaa cgcctggtct cgaaaacaca agacactctc catagaccaa gatgagttct      600

gggctttcag ttatgatgag atggctaggt ttgaccttcc tgcagtgata aactttattt      660

tgcagaaaac gggccaggaa aagatctatt atgtcggcta ttcacagggc accaccatgg      720

gctttattgc attttccacc atgccagagc tggctcagaa aatcaaaatg tattttgctt      780

tagcacccat agccactgtt aagcatgcaa aaagccccgg gaccaaattt ttgttgctgc      840

cagatatgat gatcaaggga ttgtttggca aaaagaatt tctgtatcag accagatttc      900

tcagacaact tgttatttac ctttgtggcc aggtgattct tgatcagatt tgtagtaata      960

tcatgttact tctgggtgga ttcaacacca acaatatgaa catgagccga gcaagtgtat     1020

atgctgccca cactcttgct ggaacatctg tgcaaaatat tctacactgg agccaggcag     1080

tgaattctgg tgaactccgg gcatttgact gggggagtga gaccaaaaat ctggaaaaat     1140

gcaatcagcc aactcctgta aggtacagag tcagagatat gacggtccct acagcaatgt     1200

ggacaggagg tcaggactgg ctttcaaatc cagaagacgt gaaaatgctg ctctctgagg     1260

tgaccaacct catctaccat aagaatattc ctgaatgggc tcatgtggat ttcatctggg     1320

gtttggatgc tcctcaccgt atgtacaatg aaatcatcca tctgatgcag caggaggaga     1380

ccat                                                                  1384
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<210>    10
<211>    1915
<212>    DNA
<213>    Homo sapiens

<220>
<221>    CDS
<222>    (180)..(1046)

<400>    10
ccgcacgagg gaaagaacat taggaatgcc ttttagtgcc ttgcttcctg aactagctca       60

cagtagcccg gcggcccagg gcaatccgac cacatttcac tctcaccgct gtaggaatcc      120

agatgcaggc caagtacagc agcacgaggg acatgctgga tgatgatggg gacaccacc       179

atg agc ctg cat tct caa gcc tct gcc aca act cgg cat cca gag ccc        227
Met Ser Leu His Ser Gln Ala Ser Ala Thr Thr Arg His Pro Glu Pro
1               5                   10                  15

cgg cgc aca gag cac agg gct ccc tct tca acg tgg cga cca gtg gcc        275
Arg Arg Thr Glu His Arg Ala Pro Ser Ser Thr Trp Arg Pro Val Ala
        20                  25                  30
```

```
ctg acc ctg ctg act ttg tgc ttg gtg ctg ctg ata ggg ctg gca gcc      323
Leu Thr Leu Leu Thr Leu Cys Leu Val Leu Leu Ile Gly Leu Ala Ala
        35              40                  45

ctg ggg ctt ttg ttt ttt cag tac tac cag ctc tcc aat act ggt caa      371
Leu Gly Leu Leu Phe Phe Gln Tyr Tyr Gln Leu Ser Asn Thr Gly Gln
    50                  55                  60

gac acc att tct caa atg gaa gaa aga tta gga aat acg tcc caa gag      419
Asp Thr Ile Ser Gln Met Glu Glu Arg Leu Gly Asn Thr Ser Gln Glu
65                  70                  75                  80

ttg caa tct ctt caa gtc cag aat ata aag ctt gca gga agt ctg cag      467
Leu Gln Ser Leu Gln Val Gln Asn Ile Lys Leu Ala Gly Ser Leu Gln
                85                  90                  95

cat gtg gct gaa aaa ctc tgt cgt gag ctg tat aac aaa gct gga ggc      515
His Val Ala Glu Lys Leu Cys Arg Glu Leu Tyr Asn Lys Ala Gly Gly
            100                 105                 110

tat aca aga aac atg gtg cca gca tct gct tct tct gag agc ctc agg      563
Tyr Thr Arg Asn Met Val Pro Ala Ser Ala Ser Ser Glu Ser Leu Arg
        115                 120                 125

cag ctt cca cac atg ggg gaa agt gca gca gca cac agg tgc agc cct      611
Gln Leu Pro His Met Gly Glu Ser Ala Ala Ala His Arg Cys Ser Pro
    130                 135                 140

tgt aca gaa caa tgg aaa tgg cat gga gac aat tgc tac cag ttc tat      659
Cys Thr Glu Gln Trp Lys Trp His Gly Asp Asn Cys Tyr Gln Phe Tyr
145                 150                 155                 160

aaa gac agc aaa agt tgg gag gac tgt aaa tat ttc tgc ctt agt gaa      707
Lys Asp Ser Lys Ser Trp Glu Asp Cys Lys Tyr Phe Cys Leu Ser Glu
                165                 170                 175

aac tct acc atg ctg aag ata aac aaa caa gaa gac ctg gaa ttt gcc      755
Asn Ser Thr Met Leu Lys Ile Asn Lys Gln Glu Asp Leu Glu Phe Ala
                180                 185                 190

gcg tct cag agc tac tct gag ttt ttc tac tct tat tgg aca ggg ctt      803
Ala Ser Gln Ser Tyr Ser Glu Phe Phe Tyr Ser Tyr Trp Thr Gly Leu
        195                 200                 205

ttg cgc cct gac agt ggc aag gcc tgg ctg tgg atg gat gga acc cct      851
Leu Arg Pro Asp Ser Gly Lys Ala Trp Leu Trp Met Asp Gly Thr Pro
    210                 215                 220

ttc act tct gaa ctg ttc cat att ata ata gat gtc acc agc cca aga      899
Phe Thr Ser Glu Leu Phe His Ile Ile Ile Asp Val Thr Ser Pro Arg
225                 230                 235                 240

agc aga gac tgt gtg gcc atc ctt aat ggg atg atc ttc tca aag gac      947
Ser Arg Asp Cys Val Ala Ile Leu Asn Gly Met Ile Phe Ser Lys Asp
            245                 250                 255

tgc aaa gaa ttg aag cgt tgt gtc tgt gag aga agg gca gga atg gtg      995
Cys Lys Glu Leu Lys Arg Cys Val Cys Glu Arg Arg Ala Gly Met Val
            260                 265                 270

aag cca gag agc ctc cat gtc ccc cct gaa aca tta ggc gaa ggt gac     1043
Lys Pro Glu Ser Leu His Val Pro Pro Glu Thr Leu Gly Glu Gly Asp
        275                 280                 285
```

```
tga ttcgccctct gcaactacaa atagcagagt gagccaggcg gtgccaaagc      1096

aagggctagt tgagacattg ggaaatggaa cataatcagg aaagactatc tctctgacta   1156

gtacaaaatg ggttctcgtg tttcctgttc aggatcacca gcatttctga gcttgggttt   1216

atgcacgtat ttaacagtca caagaagtct tatttacatg ccaccaacca acctcagaaa   1276

cccataatgt catctgcctt cttggcttag agataacttt tagctctctt tcttctcaat   1336

gtctaatatc acctccctgt tttcatgtct tccttacact tggtggaata agaaactttt   1396

tgaagtagag gaaatacatt gaggtaacat ccttttctct gacagtcaag tagtccatca   1456

gaaattggca gtcacttccc agattgtacc agcaaataca caggaattc ttttgtttg    1516

tttcagttca tactagtccc ttcccaatcc atcagtaaag accccatctg ccttgtccat   1576

gccgtttccc aacagggatg tcacttgata tgagaatctc aaatctcaat gccttataag   1636

cattccttcc tgtgtccatt aagactctga taattgtctc ccctccatag gaatttctcc   1696

caggaaagaa atatatcccc atctccgttt catatcagaa ctaccgtccc cgatattccc   1756

ttcagagaga ttaaagacca gaaaaaaggg gggctttttt tttgcacctg taatagtttc   1816

cggtcctttt tttttttcctt gaccccttt ttttcccttc cggggggtgga gggtttatta   1876

                                                                       1915
taattaaagg gaataccggg gaaaaaaaaa aaaaagggg
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<210> 11
<211> 288
<212> PRT
<213> Homo sapiens

<400> 11

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Met Ser Leu His Ser Gln Ala Ser Ala Thr Thr Arg His Pro Glu Pro
1               5                   10                  15


Arg Arg Thr Glu His Arg Ala Pro Ser Ser Thr Trp Arg Pro Val Ala
            20                  25                  30


Leu Thr Leu Leu Thr Leu Cys Leu Val Leu Leu Ile Gly Leu Ala Ala
        35                  40                  45


Leu Gly Leu Leu Phe Phe Gln Tyr Tyr Gln Leu Ser Asn Thr Gly Gln
    50                  55                  60


Asp Thr Ile Ser Gln Met Glu Glu Arg Leu Gly Asn Thr Ser Gln Glu
65                  70                  75                  80


Leu Gln Ser Leu Gln Val Gln Asn Ile Lys Leu Ala Gly Ser Leu Gln
                85                  90                  95


His Val Ala Glu Lys Leu Cys Arg Glu Leu Tyr Asn Lys Ala Gly Gly
```

```
            100                      105                      110

Tyr Thr Arg Asn Met Val Pro Ala Ser Ala Ser Ser Glu Ser Leu Arg
        115                 120                 125

Gln Leu Pro His Met Gly Glu Ser Ala Ala Ala His Arg Cys Ser Pro
    130                 135                 140

Cys Thr Glu Gln Trp Lys Trp His Gly Asp Asn Cys Tyr Gln Phe Tyr
145                 150                 155                 160

Lys Asp Ser Lys Ser Trp Glu Asp Cys Lys Tyr Phe Cys Leu Ser Glu
                165                 170                 175

Asn Ser Thr Met Leu Lys Ile Asn Lys Gln Glu Asp Leu Glu Phe Ala
            180                 185                 190

Ala Ser Gln Ser Tyr Ser Glu Phe Phe Tyr Ser Tyr Trp Thr Gly Leu
        195                 200                 205

Leu Arg Pro Asp Ser Gly Lys Ala Trp Leu Trp Met Asp Gly Thr Pro
    210                 215                 220

Phe Thr Ser Glu Leu Phe His Ile Ile Ile Asp Val Thr Ser Pro Arg
225                 230                 235                 240

Ser Arg Asp Cys Val Ala Ile Leu Asn Gly Met Ile Phe Ser Lys Asp
                245                 250                 255

Cys Lys Glu Leu Lys Arg Cys Val Cys Glu Arg Arg Ala Gly Met Val
            260                 265                 270

Lys Pro Glu Ser Leu His Val Pro Pro Glu Thr Leu Gly Glu Gly Asp
        275                 280                 285
```

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<210>   12
<211>   2420
<212>   DNA
<213>   Homo sapiens

<220>
<221>   misc_feature
<223>   n = a or c or g or t


<220>
<221>   CDS
<222>   (200)..(2395)
<223>   Xaa = Unknown or other
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<400>  12
cgggaggaat ggaaggagaa ggcggaatgt gggagggctc aggggatgt gggagggacg        60

aacggagaag ggggagagag gggggtccag tctcccctgg ccgagcattt ttttttttg       120

gaagtcctag gactaatctc caggaccagc actcttctcc agcccttag ggtcctgctc       180

ggccaaggcc ttccctgcc atg cga cct gtc agt gtc tgg cag tgg agc ccc       232
                       Met Arg Pro Val Ser Val Trp Gln Trp Ser Pro
                         1               5                  10

tgg ggg ctg ctg ctg tgc ctg ctg tgc agt tcg tgc ttg ggg tct ccg       280
Trp Gly Leu Leu Leu Cys Leu Leu Cys Ser Ser Cys Leu Gly Ser Pro
            15                  20                  25

tcc cct tcc acg ggc cct gag aag aag gcc ggg agc cag ggg ctt cgg       328
Ser Pro Ser Thr Gly Pro Glu Lys Lys Ala Gly Ser Gln Gly Leu Arg
            30                  35                  40

ttc cgg ctg gct ggc ttc ccc agg aag ccc tac gag ggc cgc gtg gag       376
Phe Arg Leu Ala Gly Phe Pro Arg Lys Pro Tyr Glu Gly Arg Val Glu
            45                  50                  55

ata cag cga gct ggt gaa tgg ggc acc atc tgc gat gat gac ttc acg       424
Ile Gln Arg Ala Gly Glu Trp Gly Thr Ile Cys Asp Asp Asp Phe Thr
60                  65                  70                  75

ctg cag gct gcc cac atc ctc tgc cgg gag ctg ggc ttc aca gag gcc       472
Leu Gln Ala Ala His Ile Leu Cys Arg Glu Leu Gly Phe Thr Glu Ala
                80                  85                  90

aca ggc tgg acc cac agt gcc aaa tat ggc cct gga aca ggc cgc atc       520
Thr Gly Trp Thr His Ser Ala Lys Tyr Gly Pro Gly Thr Gly Arg Ile
            95                  100                 105

tgg ctg gac aac ttg agc tgc agt ggg acc gag cag agt gtg act gaa       568
Trp Leu Asp Asn Leu Ser Cys Ser Gly Thr Glu Gln Ser Val Thr Glu
            110                 115                 120

tgt gcc tcc cgg ggc tgg ggg aac agt gac tgt acg cac gat gag gat       616
Cys Ala Ser Arg Gly Trp Gly Asn Ser Asp Cys Thr His Asp Glu Asp
            125                 130                 135

gct ggg gtc atc tgc aaa gac cag cgc ctc cct ggc ttc tcg gac tcc       664
Ala Gly Val Ile Cys Lys Asp Gln Arg Leu Pro Gly Phe Ser Asp Ser
140                 145                 150                 155

aat gtc att gag gta gag cat cac ctg caa gtg gag gag gtg cga att       712
Asn Val Ile Glu Val Glu His His Leu Gln Val Glu Glu Val Arg Ile
                160                 165                 170

cga ccc gcc gtt ggg tgg ggc aga cga ccc ctg ccc gtg acg gag ggg       760
Arg Pro Ala Val Gly Trp Gly Arg Arg Pro Leu Pro Val Thr Glu Gly
            175                 180                 185

ctg gtg gaa gtc agg ctt cct gac ggc tgg tcg caa gtg tgc gac aaa       808
Leu Val Glu Val Arg Leu Pro Asp Gly Trp Ser Gln Val Cys Asp Lys
            190                 195                 200

ggc tgg agc gcc cac aac agc cac gtg gtc tgc ggg atg ctg ggc ttc       856
Gly Trp Ser Ala His Asn Ser His Val Val Cys Gly Met Leu Gly Phe
            205                 210                 215
```

```
ccc agc gaa aag agg gtc aac gcg gcc ttc tac agg ctg cta gcc caa        904
Pro Ser Glu Lys Arg Val Asn Ala Ala Phe Tyr Arg Leu Leu Ala Gln
220             225             230             235

cgg cag caa cac tcc ttt ggt ctg cat ggg gtg gcg tgc gtg ggc acg        952
Arg Gln Gln His Ser Phe Gly Leu His Gly Val Ala Cys Val Gly Thr
                240             245             250

gag gcc cac ctc tcc ctc tgt tcc ctg gag ttc tat cgt gcc aat gac       1000
Glu Ala His Leu Ser Leu Cys Ser Leu Glu Phe Tyr Arg Ala Asn Asp
                255             260             265

acc gcc agg tgc cct ggg ggg ggc cct gca gtg gtg agc tgt gtg cca       1048
Thr Ala Arg Cys Pro Gly Gly Gly Pro Ala Val Val Ser Cys Val Pro
        270             275             280

ggc cct gtc tac gcg gca tcc agt ggc cag aag aag caa caa cag tcg       1096
Gly Pro Val Tyr Ala Ala Ser Ser Gly Gln Lys Lys Gln Gln Gln Ser
        285             290             295

aag cct cag ggg gag gtc cgt gtc cgt cta aag ggc ggc gcc cac cct       1144
Lys Pro Gln Gly Glu Val Arg Val Arg Leu Lys Gly Gly Ala His Pro
300             305             310             315

gga gag ggc cgg gta gaa gtc ctg aag gcc agc aca tgg ggc aca gtc       1192
Gly Glu Gly Arg Val Glu Val Leu Lys Ala Ser Thr Trp Gly Thr Val
                320             325             330

tgt tac cgc aag tgg gac ctg cat gca gcc agc gtg gtg tgt cgg gag       1240
Cys Tyr Arg Lys Trp Asp Leu His Ala Ala Ser Val Val Cys Arg Glu
                335             340             345

ctg ggc ttc ggg agt gct cga gaa gct ctg agt ggc gct cgc atg ggg       1288
Leu Gly Phe Gly Ser Ala Arg Glu Ala Leu Ser Gly Ala Arg Met Gly
                350             355             360

cag ggc atg ggt gct atc cac ctg agt gaa gtt cgc tgc tct gga cag       1336
Gln Gly Met Gly Ala Ile His Leu Ser Glu Val Arg Cys Ser Gly Gln
        365             370             375

gag ctc tcc ctc tgg aag tgc ccc cac aag aac atc aca gct gag gat       1384
Glu Leu Ser Leu Trp Lys Cys Pro His Lys Asn Ile Thr Ala Glu Asp
380             385             390             395

tgt tca cat agc cag gat gcc ggg gtc cgg tgc aac cta cct tac act       1432
Cys Ser His Ser Gln Asp Ala Gly Val Arg Cys Asn Leu Pro Tyr Thr
                400             405             410

ggg gca gag acc agg gtc atc cat tct gtg tca cta cag atc cga ctc       1480
Gly Ala Glu Thr Arg Val Ile His Ser Val Ser Leu Gln Ile Arg Leu
                415             420             425

agt ggg ggc cgc agc caa cat gag ggg cga gtc gag gtg caa ata ggg       1528
Ser Gly Gly Arg Ser Gln His Glu Gly Arg Val Glu Val Gln Ile Gly
        430             435             440

gga cct ggg ccc ctt cgc tgg ggc ctc atc tgt ggg gat gac tgg ggg       1576
Gly Pro Gly Pro Leu Arg Trp Gly Leu Ile Cys Gly Asp Asp Trp Gly
        445             450             455

acc ctg gag gcc atg gtg gcc tgt agg caa ctg ggt ctg ggc tac gcc       1624
Thr Leu Glu Ala Met Val Ala Cys Arg Gln Leu Gly Leu Gly Tyr Ala
460             465             470             475
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aac cac ggc ctg cag gag acc tgg tac tgg gac tct ggg aat ata aca        1672
Asn His Gly Leu Gln Glu Thr Trp Tyr Trp Asp Ser Gly Asn Ile Thr
                480                 485                 490

gag gtg gtg atg agt gga gtg cgc tgc aca ggg act gag ctg tcc ctg        1720
Glu Val Val Met Ser Gly Val Arg Cys Thr Gly Thr Glu Leu Ser Leu
                495                 500                 505

gat cag tgt gcc cat cat ggc acc cac atc acc tgc aag agg aca ggg        1768
Asp Gln Cys Ala His His Gly Thr His Ile Thr Cys Lys Arg Thr Gly
                510                 515                 520

acc cgc ttc act gct gga gtc atc tgt tct gag gca tca gat ctg ttg        1816
Thr Arg Phe Thr Ala Gly Val Ile Cys Ser Glu Ala Ser Asp Leu Leu
                525                 530                 535

ctg cac tca gca ctg gtg cag gag acc gcc tac atc gaa gac cgg ccc        1864
Leu His Ser Ala Leu Val Gln Glu Thr Ala Tyr Ile Glu Asp Arg Pro
540                 545                 550                 555

ctg cat atg ttg tac tgt gct gcg gaa gag aac tgc ctg gcc agc tca        1912
Leu His Met Leu Tyr Cys Ala Ala Glu Glu Asn Cys Leu Ala Ser Ser
                560                 565                 570

gcc cgc tca gcc aac tgg ccc tat ggt cac cgg cgt ctg ctc cga ttc        1960
Ala Arg Ser Ala Asn Trp Pro Tyr Gly His Arg Arg Leu Leu Arg Phe
                575                 580                 585

tgc tcc cag atc cac aac ctg gga cga gct gac ttc agg ccc aag gct        2008
Cys Ser Gln Ile His Asn Leu Gly Arg Ala Asp Phe Arg Pro Lys Ala
                590                 595                 600

ggg cgc cac tcc tgg gtg tgg cac gag tgc cat ggg cat tac cac agc        2056
Gly Arg His Ser Trp Val Trp His Glu Cys His Gly His Tyr His Ser
                605                 610                 615

acg gac ttc ttc act cac tat gat atc ctc acc cca nat ggc acc aag        2104
Thr Asp Phe Phe Thr His Tyr Asp Ile Leu Thr Pro Xaa Gly Thr Lys
620                 625                 630                 635

gtg gct gag ggc cac aaa gct agt ttc tgt ctc gaa gac act gag tgt        2152
Val Ala Glu Gly His Lys Ala Ser Phe Cys Leu Glu Asp Thr Glu Cys
                640                 645                 650

cag gag gat gtc tcc aag cgg tat gag tgt gcc aac ttt gga gag caa        2200
Gln Glu Asp Val Ser Lys Arg Tyr Glu Cys Ala Asn Phe Gly Glu Gln
                655                 660                 665

ggc atc act gtg ggd tgc tgg gat ctc tac cgg cat gac att gac tgt        2248
Gly Ile Thr Val Xaa Cys Trp Asp Leu Tyr Arg His Asp Ile Asp Cys
                670                 675                 680

cag tgg att gac atc acg gat gtg aag cca gga aac tac att ctc cag        2296
Gln Trp Ile Asp Ile Thr Asp Val Lys Pro Gly Asn Tyr Ile Leu Gln
                685                 690                 695

gtt gtc atc aac cca aac ttt gaa gta gca gag agb gac ttt acc aac        2344
Val Val Ile Asn Pro Asn Phe Glu Val Ala Glu Xaa Asp Phe Thr Asn
700                 705                 710                 715

aat gca atg aaa tgt aac tgc aaa tat gat gga cat aga atc tgg gtg        2392
Asn Ala Met Lys Cys Asn Cys Lys Tyr Asp Gly His Arg Ile Trp Val
                720                 725                 730
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cac macttgccac attggtgatg ccttc   2420
His

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1   5   10   15

Cys Leu Leu Cys Ser Ser Cys Leu Gly Ser Pro Ser Pro Ser Thr Gly
                20   25   30

Pro Glu Lys Lys Ala Gly Ser Gln Gly Leu Arg Phe Arg Leu Ala Gly
            35   40   45

Phe Pro Arg Lys Pro Tyr Glu Gly Arg Val Glu Ile Gln Arg Ala Gly
        50   55   60

Glu Trp Gly Thr Ile Cys Asp Asp Asp Phe Thr Leu Gln Ala Ala His
65   70   75   80

Ile Leu Cys Arg Glu Leu Gly Phe Thr Glu Ala Thr Gly Trp Thr His
                85   90   95

Ser Ala Lys Tyr Gly Pro Gly Thr Gly Arg Ile Trp Leu Asp Asn Leu
                100   105   110

Ser Cys Ser Gly Thr Glu Gln Ser Val Thr Glu Cys Ala Ser Arg Gly
            115   120   125

Trp Gly Asn Ser Asp Cys Thr His Asp Glu Asp Ala Gly Val Ile Cys
        130   135   140

Lys Asp Gln Arg Leu Pro Gly Phe Ser Asp Ser Asn Val Ile Glu Val
145   150   155   160

Glu His His Leu Gln Val Glu Glu Val Arg Ile Arg Pro Ala Val Gly
                165   170   175

Trp Gly Arg Arg Pro Leu Pro Val Thr Glu Gly Leu Val Glu Val Arg
            180   185   190

Leu Pro Asp Gly Trp Ser Gln Val Cys Asp Lys Gly Trp Ser Ala His
    195   200   205

Asn Ser His Val Val Cys Gly Met Leu Gly Phe Pro Ser Glu Lys Arg
  210   215   220

Val Asn Ala Ala Phe Tyr Arg Leu Leu Ala Gln Arg Gln Gln His Ser
225   230   235   240

Phe Gly Leu His Gly Val Ala Cys Val Gly Thr Glu Ala His Leu Ser
            245   250   255

Leu Cys Ser Leu Glu Phe Tyr Arg Ala Asn Asp Thr Ala Arg Cys Pro
        260   265   270

Gly Gly Gly Pro Ala Val Val Ser Cys Val Pro Gly Pro Val Tyr Ala
        275   280   285

Ala Ser Ser Gly Gln Lys Lys Gln Gln Gln Ser Lys Pro Gln Gly Glu
      290   295   300

Val Arg Val Arg Leu Lys Gly Gly Ala His Pro Gly Glu Gly Arg Val
305   310   315   320

Glu Val Leu Lys Ala Ser Thr Trp Gly Thr Val Cys Tyr Arg Lys Trp
        325   330   335

Asp Leu His Ala Ala Ser Val Val Cys Arg Glu Leu Gly Phe Gly Ser
        340   345   350

Ala Arg Glu Ala Leu Ser Gly Ala Arg Met Gly Gln Gly Met Gly Ala
      355   360   365

Ile His Leu Ser Glu Val Arg Cys Ser Gly Gln Glu Leu Ser Leu Trp
    370   375   380

Lys Cys Pro His Lys Asn Ile Thr Ala Glu Asp Cys Ser His Ser Gln
385   390   395   400

Asp Ala Gly Val Arg Cys Asn Leu Pro Tyr Thr Gly Ala Glu Thr Arg
        405   410   415

Val Ile His Ser Val Ser Leu Gln Ile Arg Leu Ser Gly Gly Arg Ser
        420   425   430

Gln His Glu Gly Arg Val Glu Val Gln Ile Gly Gly Pro Gly Pro Leu
      435   440   445

Arg Trp Gly Leu Ile Cys Gly Asp Asp Trp Gly Thr Leu Glu Ala Met
450   455   460

Val Ala Cys Arg Gln Leu Gly Leu Gly Tyr Ala Asn His Gly Leu Gln
465   470   475   480

Glu Thr Trp Tyr Trp Asp Ser Gly Asn Ile Thr Glu Val Val Met Ser
            485   490   495

Gly Val Arg Cys Thr Gly Thr Glu Leu Ser Leu Asp Gln Cys Ala His
        500   505   510

His Gly Thr His Ile Thr Cys Lys Arg Thr Gly Thr Arg Phe Thr Ala
        515   520   525

Gly Val Ile Cys Ser Glu Ala Ser Asp Leu Leu Leu His Ser Ala Leu
    530   535   540

Val Gln Glu Thr Ala Tyr Ile Glu Asp Arg Pro Leu His Met Leu Tyr
545   550   555   560

Cys Ala Ala Glu Glu Asn Cys Leu Ala Ser Ser Ala Arg Ser Ala Asn
            565   570   575

Trp Pro Tyr Gly His Arg Arg Leu Leu Arg Phe Cys Ser Gln Ile His
        580   585   590

Asn Leu Gly Arg Ala Asp Phe Arg Pro Lys Ala Gly Arg His Ser Trp
        595   600   605

Val Trp His Glu Cys His Gly His Tyr His Ser Thr Asp Phe Phe Thr
610   615   620

His Tyr Asp Ile Leu Thr Pro Xaa Gly Thr Lys Val Ala Glu Gly His
625   630   635   640

Lys Ala Ser Phe Cys Leu Glu Asp Thr Glu Cys Gln Glu Asp Val Ser
            645   650   655

Lys Arg Tyr Glu Cys Ala Asn Phe Gly Glu Gln Gly Ile Thr Val Xaa
            660   665   670

Cys Trp Asp Leu Tyr Arg His Asp Ile Asp Cys Gln Trp Ile Asp Ile
        675   680   685

Thr Asp Val Lys Pro Gly Asn Tyr Ile Leu Gln Val Val Ile Asn Pro
    690   695   700

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Asn Phe Glu Val Ala Glu Xaa Asp Phe Thr Asn Asn Ala Met Lys Cys
705                 710             715                 720


Asn Cys Lys Tyr Asp Gly His Arg Ile Trp Val His
                725                 730


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tccctccacc ttccacatcc tgctccaggc aggagaaggc tgactggctg gactcattga    120

gctgaagaat tccagtgac  atttgtaa atg acg ccg ctc gat tcc agg ctc      172
                                 Met Thr Pro Leu Asp Ser Arg Leu
                                 1               5


caa gcg gcc cct gcc gcc gcc gcc gcc gcc ggg ccg aag gtg ccg ccg     220
Gln Ala Ala Pro Ala Ala Ala Ala Ala Ala Gly Pro Lys Val Pro Pro
    10              15                  20


agc agt ctc cag cgc agg ctt cct tac cgg gcg acc aca atg tcc gag     268
Ser Ser Leu Gln Arg Arg Leu Pro Tyr Arg Ala Thr Thr Met Ser Glu
25              30                  35                  40


ttt ctc ctc gcc tta ctc act ctc tcg gga tta ttg ccg att gcc agg     316
Phe Leu Leu Ala Leu Leu Thr Leu Ser Gly Leu Leu Pro Ile Ala Arg
            45                  50.                 55


gtg ctg acc gtg gga gcc gac cga gat cag cag ttg tgt gat cct ggt     364
Val Leu Thr Val Gly Ala Asp Arg Asp Gln Gln Leu Cys Asp Pro Gly
        60                  65                  70


gaa ttt ctt tgc cac gat cac gtg act tgt gtc tcc cag agc tgg ctg     412
Glu Phe Leu Cys His Asp His Val Thr Cys Val Ser Gln Ser Trp Leu
        75                  80                  85


tgt gat ggg gac cct gac tgc cct gat gat tca gac gag tct tta gat     460
Cys Asp Gly Asp Pro Asp Cys Pro Asp Asp Ser Asp Glu Ser Leu Asp
        90                  95                  100


acc tgt ccc gag gag gta gaa atc aag tgc ccc ttg aat cac att gct     508
Thr Cys Pro Glu Glu Val Glu Ile Lys Cys Pro Leu Asn His Ile Ala
105                 110                 115                 120


tgc ctt ggc acc aac aaa tgt gtt cat tta tcc cag ctg tgc aat ggt     556
Cys Leu Gly Thr Asn Lys Cys Val His Leu Ser Gln Leu Cys Asn Gly
                125                 130                 135


gtc ttg gac tgc cca gat ggg tat gac gaa gga gta cat tgt cag gaa     604
Val Leu Asp Cys Pro Asp Gly Tyr Asp Glu Gly Val His Cys Gln Glu
            140                 145                 150


ctg tta tcc aat tgc caa cag ctg aat tgt cag tat aaa tgt aca atg     652
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Leu Leu Ser Asn Cys Gln Gln Leu Asn Cys Gln Tyr Lys Cys Thr Met
    155                 160             165

gtc aga aat agt aca aga tgt tac tgt gag gat gga ttc gaa ata aca          700
Val Arg Asn Ser Thr Arg Cys Tyr Cys Glu Asp Gly Phe Glu Ile Thr
    170                 175             180

gaa gat ggg aga agc tgt aaa gat caa gat gaa tgt gct gtt tat ggt          748
Glu Asp Gly Arg Ser Cys Lys Asp Gln Asp Glu Cys Ala Val Tyr Gly
185                 190             195                 200

aca ggc agc cag acc tgc aga aac aca cat gga tcc tac act tgc agt          796
Thr Gly Ser Gln Thr Cys Arg Asn Thr His Gly Ser Tyr Thr Cys Ser
                205             210                 215

tgt gtg gaa ggc tac cta atg cag cca gac agc aga tct tgc aag gct          844
Cys Val Glu Gly Tyr Leu Met Gln Pro Asp Ser Arg Ser Cys Lys Ala
            220                 225             230

aaa att gaa cct aca gat aga cca cgt ata cta tta att gca aat ttt          892
Lys Ile Glu Pro Thr Asp Arg Pro Arg Ile Leu Leu Ile Ala Asn Phe
        235                 240             245

gaa tca att gag gtt ttc tat ctt aat gga agt aaa att gca act cta          940
Glu Ser Ile Glu Val Phe Tyr Leu Asn Gly Ser Lys Ile Ala Thr Leu
        250                 255             260

agc tca gtc aat gga aat gaa att cat act ctg gat ttt att tat aat          988
Ser Ser Val Asn Gly Asn Glu Ile His Thr Leu Asp Phe Ile Tyr Asn
265                 270             275                 280

gaa gat gtg att tgt tgg att gaa tca aga gaa tct tca aat caa ctc          1036
Glu Asp Val Ile Cys Trp Ile Glu Ser Arg Glu Ser Ser Asn Gln Leu
                285             290                 295

aaa tgt atc cag ata aca aaa gca gga gga tta aca gat gaa tgg aca          1084
Lys Cys Ile Gln Ile Thr Lys Ala Gly Gly Leu Thr Asp Glu Trp Thr
            300                 305             310

atc aat att ctt caa tcc ttc cac aat gtg caa caa atg gcg att gac          1132
Ile Asn Ile Leu Gln Ser Phe His Asn Val Gln Gln Met Ala Ile Asp
            315                 320             325

tgg ctc act cga aat ctc tat ttt gtg gac cat gtc ggt gac cgg atc          1180
Trp Leu Thr Arg Asn Leu Tyr Phe Val Asp His Val Gly Asp Arg Ile
            330                 335             340

ttt gtt tgt aat tcc aac ggt tct gta tgt gtc acc ctg att gat ctg          1228
Phe Val Cys Asn Ser Asn Gly Ser Val Cys Val Thr Leu Ile Asp Leu
345                 350             355                 360

gag ctt cac aat cct aaa gca ata gca gta gat cca ata gca gga aaa          1276
Glu Leu His Asn Pro Lys Ala Ile Ala Val Asp Pro Ile Ala Gly Lys
                365             370                 375

ctt ttc ttt act gac tac ggg aat gtc gcc aaa gtg gag aga tgt gac          1324
Leu Phe Phe Thr Asp Tyr Gly Asn Val Ala Lys Val Glu Arg Cys Asp
                380             385                 390

atg gat ggg atg aac cga aca agg ata att gat tca aag aca gag cag          1372
Met Asp Gly Met Asn Arg Thr Arg Ile Ile Asp Ser Lys Thr Glu Gln
            395                 400             405
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cca gct gca ctg gca cta gac cta gtc aac aaa ttg gtt tac tgg gta    1420
Pro Ala Ala Leu Ala Leu Asp Leu Val Asn Lys Leu Val Tyr Trp Val
    410                 415                 420

gat ctt tac ttg gac tat gtg gga gta gtg gac tat caa gga aaa aat    1468
Asp Leu Tyr Leu Asp Tyr Val Gly Val Val Asp Tyr Gln Gly Lys Asn
425                 430                 435                 440

aga cac act gtc att caa ggc aga caa gtc aga cat ctt tat ggt ata    1516
Arg His Thr Val Ile Gln Gly Arg Gln Val Arg His Leu Tyr Gly Ile
                445                 450                 455

act gtg ttt gaa gat tat ttg tat gca acc aat tct gat aac tac aat    1564
Thr Val Phe Glu Asp Tyr Leu Tyr Ala Thr Asn Ser Asp Asn Tyr Asn
                460                 465                 470

atc gta agg ata aac cga ttt aat ggg act gat att cac tca tta att    1612
Ile Val Arg Ile Asn Arg Phe Asn Gly Thr Asp Ile His Ser Leu Ile
            475                 480                 485

aaa att gag aat gct tgg gga atc cga att tat caa aaa aga act caa    1660
Lys Ile Glu Asn Ala Trp Gly Ile Arg Ile Tyr Gln Lys Arg Thr Gln
        490                 495                 500

cca aca gtc aga agc cat gca tgt gaa gtc gat cca tat gga atg cca    1708
Pro Thr Val Arg Ser His Ala Cys Glu Val Asp Pro Tyr Gly Met Pro
505                 510                 515                 520

ggg ggc tgt tca cac atc tgt cta ctc agc agc agt tac aaa act cgg    1756
Gly Gly Cys Ser His Ile Cys Leu Leu Ser Ser Ser Tyr Lys Thr Arg
                525                 530                 535

act tgt cgc tgc agg act ggc ttc aac ttg gga agt gat ggc agg tca    1804
Thr Cys Arg Cys Arg Thr Gly Phe Asn Leu Gly Ser Asp Gly Arg Ser
            540                 545                 550

tgc aaa aga cca aag aat gag ttg ttc ctc ttt tat ggg aaa gga cgc    1852
Cys Lys Arg Pro Lys Asn Glu Leu Phe Leu Phe Tyr Gly Lys Gly Arg
            555                 560                 565

cca gga att gtt aga gga atg gac ttg aat acc aag ata gct gat gaa    1900
Pro Gly Ile Val Arg Gly Met Asp Leu Asn Thr Lys Ile Ala Asp Glu
        570                 575                 580

tac atg atc ccc ata gaa aat ctg gta aac cct cgt gct tta gac ttt    1948
Tyr Met Ile Pro Ile Glu Asn Leu Val Asn Pro Arg Ala Leu Asp Phe
585                 590                 595                 600

cac gca gaa acc aat tac atc tac ttt gct gac acc acc agt ttc cta    1996
His Ala Glu Thr Asn Tyr Ile Tyr Phe Ala Asp Thr Thr Ser Phe Leu
                605                 610                 615

att ggc cgg cag aag ata gat ggc aca gag aga gaa acc atc ctg aaa    2044
Ile Gly Arg Gln Lys Ile Asp Gly Thr Glu Arg Glu Thr Ile Leu Lys
            620                 625                 630

gat gat ctg gat aat gta gag g                                      2066
Asp Asp Leu Asp Asn Val Glu
            635
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<210> 15
<211> 639

- 29 -

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<213>   Homo sapiens

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Met Thr Pro Leu Asp Ser Arg Leu Gln Ala Ala Pro Ala Ala Ala Ala
1   5   10   15

Ala Ala Gly Pro Lys Val Pro Pro Ser Ser Leu Gln Arg Arg Leu Pro
            20   25   30

Tyr Arg Ala Thr Thr Met Ser Glu Phe Leu Leu Ala Leu Leu Thr Leu
        35   40   45

Ser Gly Leu Leu Pro Ile Ala Arg Val Leu Thr Val Gly Ala Asp Arg
    50   55   60

Asp Gln Gln Leu Cys Asp Pro Gly Glu Phe Leu Cys His Asp His Val
65   70   75   80

Thr Cys Val Ser Gln Ser Trp Leu Cys Asp Gly Asp Pro Asp Cys Pro
                85   90   95

Asp Asp Ser Asp Glu Ser Leu Asp Thr Cys Pro Glu Glu Val Glu Ile
            100   105   110

Lys Cys Pro Leu Asn His Ile Ala Cys Leu Gly Thr Asn Lys Cys Val
        115   120   125

His Leu Ser Gln Leu Cys Asn Gly Val Leu Asp Cys Pro Asp Gly Tyr
    130   135   140

Asp Glu Gly Val His Cys Gln Glu Leu Leu Ser Asn Cys Gln Gln Leu
145   150   155   160

Asn Cys Gln Tyr Lys Cys Thr Met Val Arg Asn Ser Thr Arg Cys Tyr
            165   170   175

Cys Glu Asp Gly Phe Glu Ile Thr Glu Asp Gly Arg Ser Cys Lys Asp
            180   185   190

Gln Asp Glu Cys Ala Val Tyr Gly Thr Gly Ser Gln Thr Cys Arg Asn
        195   200   205

Thr His Gly Ser Tyr Thr Cys Ser Cys Val Glu Gly Tyr Leu Met Gln
    210   215   220

Pro Asp Ser Arg Ser Cys Lys Ala Lys Ile Glu Pro Thr Asp Arg Pro
225   230   235   240

Arg Ile Leu Leu Ile Ala Asn Phe Glu Ser Ile Glu Val Phe Tyr Leu
                245   250   255

Asn Gly Ser Lys Ile Ala Thr Leu Ser Ser Val Asn Gly Asn Glu Ile
                260   265   270

His Thr Leu Asp Phe Ile Tyr Asn Glu Asp Val Ile Cys Trp Ile Glu
            275   280   285

Ser Arg Glu Ser Ser Asn Gln Leu Lys Cys Ile Gln Ile Thr Lys Ala
    290   295   300

Gly Gly Leu Thr Asp Glu Trp Thr Ile Asn Ile Leu Gln Ser Phe His
305   310   315   320

Asn Val Gln Gln Met Ala Ile Asp Trp Leu Thr Arg Asn Leu Tyr Phe
                325   330   335

Val Asp His Val Gly Asp Arg Ile Phe Val Cys Asn Ser Asn Gly Ser
            340   345   350

Val Cys Val Thr Leu Ile Asp Leu Glu Leu His Asn Pro Lys Ala Ile
        355   360   365

Ala Val Asp Pro Ile Ala Gly Lys Leu Phe Phe Thr Asp Tyr Gly Asn
    370   375   380

Val Ala Lys Val Glu Arg Cys Asp Met Asp Gly Met Asn Arg Thr Arg
385   390   395   400

Ile Ile Asp Ser Lys Thr Glu Gln Pro Ala Ala Leu Ala Leu Asp Leu
            405   410   415

Val Asn Lys Leu Val Tyr Trp Val Asp Leu Tyr Leu Asp Tyr Val Gly
        420   425   430

Val Val Asp Tyr Gln Gly Lys Asn Arg His Thr Val Ile Gln Gly Arg
        435   440   445

Gln Val Arg His Leu Tyr Gly Ile Thr Val Phe Glu Asp Tyr Leu Tyr
    450   455   460

Ala Thr Asn Ser Asp Asn Tyr Asn Ile Val Arg Ile Asn Arg Phe Asn
465   470   475   480

Gly Thr Asp Ile His Ser Leu Ile Lys Ile Glu Asn Ala Trp Gly Ile
            485   490   495

```
Arg Ile Tyr Gln Lys Arg Thr Gln Pro Thr Val Arg Ser His Ala Cys
            500                 505             510

Glu Val Asp Pro Tyr Gly Met Pro Gly Gly Cys Ser His Ile Cys Leu
            515                 520             525

Leu Ser Ser Ser Tyr Lys Thr Arg Thr Cys Arg Cys Arg Thr Gly Phe
    530                 535                 540

Asn Leu Gly Ser Asp Gly Arg Ser Cys Lys Arg Pro Lys Asn Glu Leu
545                 550                 555                 560

Phe Leu Phe Tyr Gly Lys Gly Arg Pro Gly Ile Val Arg Gly Met Asp
            565                 570                 575

Leu Asn Thr Lys Ile Ala Asp Glu Tyr Met Ile Pro Ile Glu Asn Leu
            580                 585                 590

Val Asn Pro Arg Ala Leu Asp Phe His Ala Glu Thr Asn Tyr Ile Tyr
            595                 600                 605

Phe Ala Asp Thr Thr Ser Phe Leu Ile Gly Arg Gln Lys Ile Asp Gly
    610                 615                 620

Thr Glu Arg Glu Thr Ile Leu Lys Asp Asp Leu Asp Asn Val Glu
625                 630                 635
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tggaggaggc cccgcagcga catggaggga gctgctttgc tgaaagtctt tgtcctctgc     120

atctggaacc aaaatcactt cccggaattg accaactggt agactcgcct agaggggaag     180

cattgtgtcc tagttgaggc taacagtcag tatccagcct caacattcag cagaggcccc     240

agatcagcgt ctgagccagg ccaacaatga ccaaggagg atg gga tcc tgg gtg       294
                                              Met Gly Ser Trp Val
                                              1               5

cag ctc atc aca agc gtc ggg gtg cag caa aac cat cca ggc tgg aca      342
Gln Leu Ile Thr Ser Val Gly Val Gln Gln Asn His Pro Gly Trp Thr
            10                  15                  20
```

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gtg gct gga cag ttc caa gaa aag aaa cgc ttc act gaa gaa gtc att        390
Val Ala Gly Gln Phe Gln Glu Lys Lys Arg Phe Thr Glu Glu Val Ile
            25              30              35

gaa tac ttc cag aag aaa gtt agc cca gtg cat ctg aaa atc ctg ctg        438
Glu Tyr Phe Gln Lys Lys Val Ser Pro Val His Leu Lys Ile Leu Leu
            40              45              50

act agc gat gaa gcc tgg aag aga ttc gtg cgt gtg gct gaa ttg ccc        486
Thr Ser Asp Glu Ala Trp Lys Arg Phe Val Arg Val Ala Glu Leu Pro
            55              60              65

agg gaa gaa gca gat gct ctc tat gaa gct ctg aag aat ctt aca cca        534
Arg Glu Glu Ala Asp Ala Leu Tyr Glu Ala Leu Lys Asn Leu Thr Pro
70              75              80              85

tat gtg gct att gag gac aaa gac atg cag caa aaa gaa cag cag ttt        582
Tyr Val Ala Ile Glu Asp Lys Asp Met Gln Gln Lys Glu Gln Gln Phe
            90              95              100

agg gag tgg ttt ttg aaa gag ttt cct caa atc aga tgg aag att cag        630
Arg Glu Trp Phe Leu Lys Glu Phe Pro Gln Ile Arg Trp Lys Ile Gln
            105             110             115

gag tcc ata gaa agg ctt cgt gtc att gca aat gag att gaa aag gtc        678
Glu Ser Ile Glu Arg Leu Arg Val Ile Ala Asn Glu Ile Glu Lys Val
            120             125             130

cac aga ggc tgc gtc atc gcc aat gtg gtg tct ggc tcc act ggc atc        726
His Arg Gly Cys Val Ile Ala Asn Val Val Ser Gly Ser Thr Gly Ile
            135             140             145

ctg tct gtc att ggc gtt atg ttg gca cca ttt aca gca ggg ctg agc        774
Leu Ser Val Ile Gly Val Met Leu Ala Pro Phe Thr Ala Gly Leu Ser
150             155             160             165

ctg agc att act gca gct ggg gta ggg ctg gga ata gca tct gcc acg        822
Leu Ser Ile Thr Ala Ala Gly Val Gly Leu Gly Ile Ala Ser Ala Thr
            170             175             180

gct ggg atc gcc tcc agc atc gtg gag aac aca tac aca agg tca gca        870
Ala Gly Ile Ala Ser Ser Ile Val Glu Asn Thr Tyr Thr Arg Ser Ala
            185             190             195

gaa ctc aca gcc agc agg ctg act gca acc agc act gac caa ttg gag        918
Glu Leu Thr Ala Ser Arg Leu Thr Ala Thr Ser Thr Asp Gln Leu Glu
            200             205             210

gca tta agg gac att ctg cgt gac atc aca ccc aat gtg ctt tct ttt        966
Ala Leu Arg Asp Ile Leu Arg Asp Ile Thr Pro Asn Val Leu Ser Phe
            215             220             225

gca ctt gat ttt gac gaa gcc aca aaa atg att gcg aat gat gtc cat       1014
Ala Leu Asp Phe Asp Glu Ala Thr Lys Met Ile Ala Asn Asp Val His
230             235             240             245

aca ctc agg aga tct aaa gcc act gtt gga cgc cct ttg att gct tgg       1062
Thr Leu Arg Arg Ser Lys Ala Thr Val Gly Arg Pro Leu Ile Ala Trp
            250             255             260

cga tat gta cct ata aat gtt gtt gag aca ctg aga aca cgt ggg gcc       1110
Arg Tyr Val Pro Ile Asn Val Val Glu Thr Leu Arg Thr Arg Gly Ala
            265             270             275
```

```
ccc acc cgg ata gtg aga aaa gta gcc cgg aac ctg ggc aag gcc act        1158
Pro Thr Arg Ile Val Arg Lys Val Ala Arg Asn Leu Gly Lys Ala Thr
        280                 285                 290

tca ggt gtc ctt gtt gtg ctg gat gta gtc aac ctt gtg caa gac tca        1206
Ser Gly Val Leu Val Val Leu Asp Val Val Asn Leu Val Gln Asp Ser
    295                 300                 305

ctg gac ttg cac aag ggg gca aaa tcc gag tct gct gag tcg ctg agg        1254
Leu Asp Leu His Lys Gly Ala Lys Ser Glu Ser Ala Glu Ser Leu Arg
310                 315                 320                 325

cag tgg gct cag gag ctg gag gag aat ctc aat gag ctc acc cat atc        1302
Gln Trp Ala Gln Glu Leu Glu Glu Asn Leu Asn Glu Leu Thr His Ile
                330                 335                 340

cat cag agt cta aaa gca ggc taggcccaat                                  1333
His Gln Ser Leu Lys Ala Gly
                345
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<210> 17
<211> 348
<212> PRT
<213> Homo sapiens

<400> 17

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Met Gly Ser Trp Val Gln Leu Ile Thr Ser Val Gly Val Gln Gln Asn
1               5                   10                  15


His Pro Gly Trp Thr Val Ala Gly Gln Phe Gln Glu Lys Lys Arg Phe
                20                  25                  30


Thr Glu Glu Val Ile Glu Tyr Phe Gln Lys Lys Val Ser Pro Val His
            35                  40                  45


Leu Lys Ile Leu Leu Thr Ser Asp Glu Ala Trp Lys Arg Phe Val Arg
        50                  55                  60


Val Ala Glu Leu Pro Arg Glu Glu Ala Asp Ala Leu Tyr Glu Ala Leu
65                  70                  75                  80


Lys Asn Leu Thr Pro Tyr Val Ala Ile Glu Asp Lys Asp Met Gln Gln
                    85                  90                  95


Lys Glu Gln Gln Phe Arg Glu Trp Phe Leu Lys Glu Phe Pro Gln Ile
                100                 105                 110


Arg Trp Lys Ile Gln Glu Ser Ile Glu Arg Leu Arg Val Ile Ala Asn
            115                 120                 125


Glu Ile Glu Lys Val His Arg Gly Cys Val Ile Ala Asn Val Val Ser
    130                 135                 140
```

```
Gly Ser Thr Gly Ile Leu Ser Val Ile Gly Val Met Leu Ala Pro Phe
145                 150             155                 160


Thr Ala Gly Leu Ser Leu Ser Ile Thr Ala Ala Gly Val Gly Leu Gly
                165             170                 175


Ile Ala Ser Ala Thr Ala Gly Ile Ala Ser Ser Ile Val Glu Asn Thr
            180             185                 190


Tyr Thr Arg Ser Ala Glu Leu Thr Ala Ser Arg Leu Thr Ala Thr Ser
        195             200             205


Thr Asp Gln Leu Glu Ala Leu Arg Asp Ile Leu Arg Asp Ile Thr Pro
    210             215             220


Asn Val Leu Ser Phe Ala Leu Asp Phe Asp Glu Ala Thr Lys Met Ile
225             230             235                 240


Ala Asn Asp Val His Thr Leu Arg Arg Ser Lys Ala Thr Val Gly Arg
            245             250                 255


Pro Leu Ile Ala Trp Arg Tyr Val Pro Ile Asn Val Val Glu Thr Leu
            260             265                 270


Arg Thr Arg Gly Ala Pro Thr Arg Ile Val Arg Lys Val Ala Arg Asn
        275             280             285


Leu Gly Lys Ala Thr Ser Gly Val Leu Val Val Leu Asp Val Val Asn
    290             295             300


Leu Val Gln Asp Ser Leu Asp Leu His Lys Gly Ala Lys Ser Glu Ser
305             310             315                 320


Ala Glu Ser Leu Arg Gln Trp Ala Gln Glu Leu Glu Glu Asn Leu Asn
            325             330                 335


Glu Leu Thr His Ile His Gln Ser Leu Lys Ala Gly
            340             345


<210>  18
<211>  1490
<212>  DNA
<213>  Homo sapiens

<220>
<221>  CDS
<222>  (151)..(1170)

<400>  18
agcaaaagag aaaaggagcc aggctgggct tcctgatccc acagcatcgc agagctcggg     60
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aggcacagct cacagacaca ggaaacacag gactgctatt ctgctctcct gcccacggtg        120

atctggtgcc agctggtgga acagtgggtg atg gcg tcc ctg ctg caa gac cag        174
                                  Met Ala Ser Leu Leu Gln Asp Gln
                                   1                   5

ctg acc act gat cag gac ttg ctg ctg atg cag gaa ggc atg ccg atg        222
Leu Thr Thr Asp Gln Asp Leu Leu Leu Met Gln Glu Gly Met Pro Met
    10                  15                  20

cgc aag gtg agg tcc aaa agc tgg aag aag cta aga tac ttc aga ctt        270
Arg Lys Val Arg Ser Lys Ser Trp Lys Lys Leu Arg Tyr Phe Arg Leu
25                  30                  35                  40

cag aat gac ggc atg aca gtc tgg cat gca cgg cag gcc agg ggc agt        318
Gln Asn Asp Gly Met Thr Val Trp His Ala Arg Gln Ala Arg Gly Ser
                45                  50                  55

gcc aag ccc agc ttc tca atc tct gat gtg gag aca ata cgt aat ggc        366
Ala Lys Pro Ser Phe Ser Ile Ser Asp Val Glu Thr Ile Arg Asn Gly
                60                  65                  70

cat gat tcc gag ttg ctg cgt agc ctg gca gag gag ctc ccc ctg gag        414
His Asp Ser Glu Leu Leu Arg Ser Leu Ala Glu Glu Leu Pro Leu Glu
                75                  80                  85

cag ggc ttc acc att gtc ttc cat ggc cgc cgc tcc aac ctg gac ctg        462
Gln Gly Phe Thr Ile Val Phe His Gly Arg Arg Ser Asn Leu Asp Leu
    90                  95                  100

atg gcc aac agt gtt gag gag gcc cag ata tgg atg cga ggg ctc cag        510
Met Ala Asn Ser Val Glu Glu Ala Gln Ile Trp Met Arg Gly Leu Gln
105                 110                 115                 120

ctg ttg gtg gat ctt gtc acc agc atg gac cat cag gag cgc ctg gac        558
Leu Leu Val Asp Leu Val Thr Ser Met Asp His Gln Glu Arg Leu Asp
                125                 130                 135

caa tgg ctg agc gat tgg ttt caa cgt gga gac aaa aat cag gat ggt        606
Gln Trp Leu Ser Asp Trp Phe Gln Arg Gly Asp Lys Asn Gln Asp Gly
                140                 145                 150

aag atg agt ttc caa gaa gtt cag cgg tta ttg cac cta atg aat gtg        654
Lys Met Ser Phe Gln Glu Val Gln Arg Leu Leu His Leu Met Asn Val
                155                 160                 165

gaa atg gac caa gaa tat gcc ttc agt ctt ttt cag gca gca gac acg        702
Glu Met Asp Gln Glu Tyr Ala Phe Ser Leu Phe Gln Ala Ala Asp Thr
    170                 175                 180

tcc cag tct gga acc ctg gaa gga gaa gaa ttc gta cag ttc tat aag        750
Ser Gln Ser Gly Thr Leu Glu Gly Glu Glu Phe Val Gln Phe Tyr Lys
185                 190                 195                 200

gca ttg act aaa cgt gct gag gtg cag gaa ctg ttt gaa agt ttt tca        798
Ala Leu Thr Lys Arg Ala Glu Val Gln Glu Leu Phe Glu Ser Phe Ser
                205                 210                 215

gct gat ggg cag aag ctg act ctg ctg gaa ttt ttg gat ttc ctc caa        846
Ala Asp Gly Gln Lys Leu Thr Leu Leu Glu Phe Leu Asp Phe Leu Gln
                220                 225                 230

gag gag cag aag gag aga gac tgc acc tct gag ctt gct ctg gaa ctc        894
```

```
          Glu Glu Gln Lys Glu Arg Asp Cys Thr Ser Glu Leu Ala Leu Glu Leu
                  235             240             245

att gac cgc tat gaa cct tca gac agt ggc aaa ctg cgg cat gtg ctg          942
Ile Asp Arg Tyr Glu Pro Ser Asp Ser Gly Lys Leu Arg His Val Leu
        250             255             260

agt atg gat ggc ttc ctc agc tac ctc tgc tct aag gat gga gac atc          990
Ser Met Asp Gly Phe Leu Ser Tyr Leu Cys Ser Lys Asp Gly Asp Ile
265             270             275             280

ttc aac cca gcc tgc ctc ccc atc tat cag gat atg act caa ccc ctg         1038
Phe Asn Pro Ala Cys Leu Pro Ile Tyr Gln Asp Met Thr Gln Pro Leu
                285             290             295

aac cac tac ttc atc tgc tct tct cat aac acc tac cta gtg ggg gac         1086
Asn His Tyr Phe Ile Cys Ser Ser His Asn Thr Tyr Leu Val Gly Asp
            300             305             310

cag ctt tgc ggc cag agc agc gtc gag gga tat ata cgg tgc agt ggt         1134
Gln Leu Cys Gly Gln Ser Ser Val Glu Gly Tyr Ile Arg Cys Ser Gly
            315             320             325

ggt aga gaa ggg gtc caa ctc atg aga ggg acc atg tagaaaagtg            1180
Gly Arg Glu Gly Val Gln Leu Met Arg Gly Thr Met
        330             335             340

aggggagctg tcagtgtcta acagattggg acagtgttgt gggggtttag gggctgagga      1240

gccctggata ccagagacac ttggaggaga tattgaagac tggtgggaga atggtaatga      1300

aaccctatgg gtcaatggaa cttctctttc acaagctatg aaactctcct ggaactcaga      1360

ggccctgaca gatttatatt taacaaatta ataaacagat tgttaaatgg aaggcaatag      1420

agaataggag ttaaaaatat aggttctgga gtcagaccat ctgaaattat atcctagctc      1480

ctttacttgg                    .                                         1490
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<210> 19
<211> 340
<212> PRT
<213> Homo sapiens

<400> 19

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Met Ala Ser Leu Leu Gln Asp Gln Leu Thr Thr Asp Gln Asp Leu Leu
1               5               10              15


Leu Met Gln Glu Gly Met Pro Met Arg Lys Val Arg Ser Lys Ser Trp
                20              25              30


Lys Lys Leu Arg Tyr Phe Arg Leu Gln Asn Asp Gly Met Thr Val Trp
            35              40              45


His Ala Arg Gln Ala Arg Gly Ser Ala Lys Pro Ser Phe Ser Ile Ser
    50              55              60
```

Asp Val Glu Thr Ile Arg Asn Gly His Asp Ser Glu Leu Leu Arg Ser
65   70   75   80

Leu Ala Glu Glu Leu Pro Leu Glu Gln Gly Phe Thr Ile Val Phe His
              85   90   95

Gly Arg Arg Ser Asn Leu Asp Leu Met Ala Asn Ser Val Glu Glu Ala
              100   105   110

Gln Ile Trp Met Arg Gly Leu Gln Leu Leu Val Asp Leu Val Thr Ser
          115   120   125

Met Asp His Gln Glu Arg Leu Asp Gln Trp Leu Ser Asp Trp Phe Gln
      130   135   140

Arg Gly Asp Lys Asn Gln Asp Gly Lys Met Ser Phe Gln Glu Val Gln
145   150   155   160

Arg Leu Leu His Leu Met Asn Val Glu Met Asp Gln Glu Tyr Ala Phe
              165   170   175

Ser Leu Phe Gln Ala Ala Asp Thr Ser Gln Ser Gly Thr Leu Glu Gly
          180   185   190

Glu Glu Phe Val Gln Phe Tyr Lys Ala Leu Thr Lys Arg Ala Glu Val
          195   200   205

Gln Glu Leu Phe Glu Ser Phe Ser Ala Asp Gly Gln Lys Leu Thr Leu
      210   215   220

Leu Glu Phe Leu Asp Phe Leu Gln Glu Glu Gln Lys Glu Arg Asp Cys
225   230   235   240

Thr Ser Glu Leu Ala Leu Glu Leu Ile Asp Arg Tyr Glu Pro Ser Asp
              245   250   255

Ser Gly Lys Leu Arg His Val Leu Ser Met Asp Gly Phe Leu Ser Tyr
          260   265   270

Leu Cys Ser Lys Asp Gly Asp Ile Phe Asn Pro Ala Cys Leu Pro Ile
          275   280   285

Tyr Gln Asp Met Thr Gln Pro Leu Asn His Tyr Phe Ile Cys Ser Ser
      290   295   300

His Asn Thr Tyr Leu Val Gly Asp Gln Leu Cys Gly Gln Ser Ser Val
305   310   315   320

```
Glu Gly Tyr Ile Arg Cys Ser Gly Gly Arg Glu Gly Val Gln Leu Met
            325                 330                 335


Arg Gly Thr Met
            340


<210>  20
<211>  2035
<212>  DNA
<213>  Homo sapiens

<220>
<221>  CDS
<222>  (189)..(1415)

<400>  20
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gtgaagagtt tttaaaccca caaattcttc ttactttaga attagttgtt acattggcag     120

gaaaaaataa atgcagatgt tggaccatgt tggaaacctt gtcaagacag tggattgtct     180

cacacaga atg gaa atg tgg ctt ctg att ctg gtg gcg tat atg ttc cag     230
         Met Glu Met Trp Leu Leu Ile Leu Val Ala Tyr Met Phe Gln
          1               5                  10

aga aat gtg aat tca gta cat atg cca act aaa gct gtg gac cca gaa     278
Arg Asn Val Asn Ser Val His Met Pro Thr Lys Ala Val Asp Pro Glu
15                  20              25                  30

gca ttc atg aat att agt gaa atc atc caa cat caa ggc tat ccc tgt     326
Ala Phe Met Asn Ile Ser Glu Ile Ile Gln His Gln Gly Tyr Pro Cys
                 35              40                  45

gag gaa tat gaa gtc gca act gaa gat ggg tat atc ctt tct gtt aac     374
Glu Glu Tyr Glu Val Ala Thr Glu Asp Gly Tyr Ile Leu Ser Val Asn
             50              55                  60

agg att cct cga ggc cta gtg caa cct aag aag aca ggt tcc agg cct     422
Arg Ile Pro Arg Gly Leu Val Gln Pro Lys Lys Thr Gly Ser Arg Pro
         65              70                  75

gtg gtg tta ctg cag cat ggc cta gtt gga ggt gct agc aac tgg att     470
Val Val Leu Leu Gln His Gly Leu Val Gly Gly Ala Ser Asn Trp Ile
     80              85                  90

tcc aac ctg ccc aac aat agc ctg ggc ttc att ctg gca gat gct ggt     518
Ser Asn Leu Pro Asn Asn Ser Leu Gly Phe Ile Leu Ala Asp Ala Gly
95                  100             105                 110

ttt gac gtg tgg atg ggg aac agc agg gga aac gcc tgg tct cga aaa     566
Phe Asp Val Trp Met Gly Asn Ser Arg Gly Asn Ala Trp Ser Arg Lys
                 115             120                 125

cac aag aca ctc tcc ata gac caa gat gag ttc tgg gct ttc agt tat     614
His Lys Thr Leu Ser Ile Asp Gln Asp Glu Phe Trp Ala Phe Ser Tyr
                 130             135                 140

gat gag atg gct agg ttt gac ctt cct gca gtg ata aac ttt att ttg     662
Asp Glu Met Ala Arg Phe Asp Leu Pro Ala Val Ile Asn Phe Ile Leu
             145             150                 155
```

```
cag aaa acg ggc cag gaa aag atc tat tat gtc ggc tat tca cag ggc    710
Gln Lys Thr Gly Gln Glu Lys Ile Tyr Tyr Val Gly Tyr Ser Gln Gly
    160                 165                 170

acc acc atg ggc ttt att gca ttt tcc acc atg cca gag ctg gct cag    758
Thr Thr Met Gly Phe Ile Ala Phe Ser Thr Met Pro Glu Leu Ala Gln
175                 180                 185                 190

aaa atc aaa atg tat ttt gct tta gca ccc ata gcc act gtt aag cat    806
Lys Ile Lys Met Tyr Phe Ala Leu Ala Pro Ile Ala Thr Val Lys His
                195                 200                 205

gca aaa agc ccc ggg acc aaa ttt ttg ttg ctg cca gat atg atg atc    854
Ala Lys Ser Pro Gly Thr Lys Phe Leu Leu Leu Pro Asp Met Met Ile
                210                 215                 220

aag gga ttg ttt ggc aaa aaa gaa ttt ctg tat cag acc aga ttt ctc    902
Lys Gly Leu Phe Gly Lys Lys Glu Phe Leu Tyr Gln Thr Arg Phe Leu
                225                 230                 235

aga caa ctt gtt att tac ctt tgt ggc cag gtg att ctt gat cag att    950
Arg Gln Leu Val Ile Tyr Leu Cys Gly Gln Val Ile Leu Asp Gln Ile
    240                 245                 250

tgt agt aat atc atg tta ctt ctg ggt gga ttc aac acc aac aat atg    998
Cys Ser Asn Ile Met Leu Leu Leu Gly Gly Phe Asn Thr Asn Asn Met
255                 260                 265                 270

aac atg agc cga gca agt gta tat gct gcc cac act ctt gct gga aca   1046
Asn Met Ser Arg Ala Ser Val Tyr Ala Ala His Thr Leu Ala Gly Thr
                275                 280                 285

tct gtg caa aat att cta cac tgg agc cag gca gtg aat tct ggt gaa   1094
Ser Val Gln Asn Ile Leu His Trp Ser Gln Ala Val Asn Ser Gly Glu
                290                 295                 300

ctc cgg gca ttt gac tgg ggg agt gag acc aaa aat ctg gaa aaa tgc   1142
Leu Arg Ala Phe Asp Trp Gly Ser Glu Thr Lys Asn Leu Glu Lys Cys
                305                 310                 315

aat cag cca act cct gta agg tac aga gtc aga gat atg acg gtc cct   1190
Asn Gln Pro Thr Pro Val Arg Tyr Arg Val Arg Asp Met Thr Val Pro
    320                 325                 330

aca gca atg tgg aca gga ggt cag gac tgg ctt tca aat cca gaa gac   1238
Thr Ala Met Trp Thr Gly Gly Gln Asp Trp Leu Ser Asn Pro Glu Asp
335                 340                 345                 350

gtg aaa atg ctg ctc tct gag gtg acc aac ctc atc tac cat aag aat   1286
Val Lys Met Leu Leu Ser Glu Val Thr Asn Leu Ile Tyr His Lys Asn
                355                 360                 365

att cct gaa tgg gct cat gtg gat ttc atc tgg ggt ttg gat gct cct   1334
Ile Pro Glu Trp Ala His Val Asp Phe Ile Trp Gly Leu Asp Ala Pro
                370                 375                 380

cac cgt atg tac aat gaa atc atc cat ctg atg cag cag gag gag acc   1382
His Arg Met Tyr Asn Glu Ile Ile His Leu Met Gln Gln Glu Glu Thr
                385                 390                 395

aac ctt tcc cag gga cgg tgt gag gcc gta ttg tgaagcatct gacactgacg   1435
Asn Leu Ser Gln Gly Arg Cys Glu Ala Val Leu
    400                 405
```

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atcttaggac aacctcctga gggatggggc taggacccat gaaggcagaa ttatggagag   1495

cagagaccta gtatacattt ttcagattcc ctgcacttgg cactaaatcc gacacttaca   1555

tttacatttt ttttctgtaa attaaagtac ttattaggta aatagaggtt ttgtatgcta   1615

ttatatattc taccatcttg aagggtaggt tttacctgat agccagaaaa tatctagaca   1675

ttctctatat cattcaggta aatctcttta aaacacctat tgttttttct ataagccata   1735

tttttggagc actaaagtaa aatggcaaat tgggacagat attgaggtct ggagtctgtg   1795

gattattgtt gactttgaca aaataagcta gacattttca ccttgttgcc acagagacat   1855

aacactacct caggaagctg agctgcttta aggacaacaa caacaaaatc agtgttacag   1915

tatggatgaa atctatgtta agcattctca gaataaggcc aagttttata gttgcatctc   1975

agggaagaaa attttatagg atgtttatga gttctccaat aaatgcattc tgcattacat   2035
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<210> 21
<211> 409
<212> PRT
<213> Homo sapiens

<400> 21

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Met Glu Met Trp Leu Leu Ile Leu Val Ala Tyr Met Phe Gln Arg Asn
1               5                   10                  15

Val Asn Ser Val His Met Pro Thr Lys Ala Val Asp Pro Glu Ala Phe
            20                  25                  30

Met Asn Ile Ser Glu Ile Ile Gln His Gln Gly Tyr Pro Cys Glu Glu
        35                  40                  45

Tyr Glu Val Ala Thr Glu Asp Gly Tyr Ile Leu Ser Val Asn Arg Ile
    50                  55                  60

Pro Arg Gly Leu Val Gln Pro Lys Lys Thr Gly Ser Arg Pro Val Val
65                  70                  75                  80

Leu Leu Gln His Gly Leu Val Gly Gly Ala Ser Asn Trp Ile Ser Asn
                85                  90                  95

Leu Pro Asn Asn Ser Leu Gly Phe Ile Leu Ala Asp Ala Gly Phe Asp
                100                 105                 110

Val Trp Met Gly Asn Ser Arg Gly Asn Ala Trp Ser Arg Lys His Lys
            115                 120                 125

Thr Leu Ser Ile Asp Gln Asp Glu Phe Trp Ala Phe Ser Tyr Asp Glu
    130                 135                 140
```

Met Ala Arg Phe Asp Leu Pro Ala Val Ile Asn Phe Ile Leu Gln Lys
145   150   155   160

Thr Gly Gln Glu Lys Ile Tyr Tyr Val Gly Tyr Ser Gln Gly Thr Thr
                165   170   175

Met Gly Phe Ile Ala Phe Ser Thr Met Pro Glu Leu Ala Gln Lys Ile
            180   185   190

Lys Met Tyr Phe Ala Leu Ala Pro Ile Ala Thr Val Lys His Ala Lys
            195   200   205

Ser Pro Gly Thr Lys Phe Leu Leu Leu Pro Asp Met Met Ile Lys Gly
    210   215   220

Leu Phe Gly Lys Lys Glu Phe Leu Tyr Gln Thr Arg Phe Leu Arg Gln
225   230   235   240

Leu Val Ile Tyr Leu Cys Gly Gln Val Ile Leu Asp Gln Ile Cys Ser
            245   250   255

Asn Ile Met Leu Leu Leu Gly Gly Phe Asn Thr Asn Asn Met Asn Met
            260   265   270

Ser Arg Ala Ser Val Tyr Ala Ala His Thr Leu Ala Gly Thr Ser Val
            275   280   285

Gln Asn Ile Leu His Trp Ser Gln Ala Val Asn Ser Gly Glu Leu Arg
    290   295   300

Ala Phe Asp Trp Gly Ser Glu Thr Lys Asn Leu Glu Lys Cys Asn Gln
305   310   315   320

Pro Thr Pro Val Arg Tyr Arg Val Arg Asp Met Thr Val Pro Thr Ala
            325   330   335

Met Trp Thr Gly Gly Gln Asp Trp Leu Ser Asn Pro Glu Asp Val Lys
            340   345   350

Met Leu Leu Ser Glu Val Thr Asn Leu Ile Tyr His Lys Asn Ile Pro
            355   360   365

Glu Trp Ala His Val Asp Phe Ile Trp Gly Leu Asp Ala Pro His Arg
    370   375   380

Met Tyr Asn Glu Ile Ile His Leu Met Gln Gln Glu Glu Thr Asn Leu
385   390   395   400

Ser Gln Gly Arg Cys Glu Ala Val Leu
                405

<210>   22
<211>   2224
<212>   DNA
<213>   Homo sapiens

<220>
<221>   misc_feature
<223>   n = a or c or g or t

<220>
<221>   CDS
<222>   (82)..(921)
<223>   Xaa = Unknown or other

<400>   22
tgcttcctga actagctcac agtagcccgg cggcccaggg caatccgacc acatttcact   60

ctcaccgctg taggaatcca g atg cag gcc aag tac agc agc acg agg gac   111
                         Met Gln Ala Lys Tyr Ser Ser Thr Arg Asp
                         1   5   10

atg ctg gat gat gat ggg gac acc acc atg agc ctg cat tct caa gcc   159
Met Leu Asp Asp Asp Gly Asp Thr Thr Met Ser Leu His Ser Gln Ala
            15   20   25

tct gcc aca act cgg cat cca gag ccc cgg cgc aca gag cac agg gct   207
Ser Ala Thr Thr Arg His Pro Glu Pro Arg Arg Thr Glu His Arg Ala
            30   35   40

ccc tct tca acg tgg cga cca gtg gcc ctg acc ctg ctg act ttg tgc   255
Pro Ser Ser Thr Trp Arg Pro Val Ala Leu Thr Leu Leu Thr Leu Cys
            45   50   55

ttg gtg ctg ctg ata ggg ctg gca gcc ctg ggg ctt ttg ttt ttt cag   303
Leu Val Leu Leu Ile Gly Leu Ala Ala Leu Gly Leu Leu Phe Phe Gln
    60   65   70

tac tac cag ctc tcc aat act ggt caa gac acc att tct caa atg gaa   351
Tyr Tyr Gln Leu Ser Asn Thr Gly Gln Asp Thr Ile Ser Gln Met Glu
75   80   85   90

gaa aga tta gga aat acg tcc caa gag ttg caa tct ctt caa gtc cag   399
Glu Arg Leu Gly Asn Thr Ser Gln Glu Leu Gln Ser Leu Gln Val Gln
                95   100   105

aat ata aag ctt gca gga agt ctg cag cat gtg gct gaa aaa ctc tgt   447
Asn Ile Lys Leu Ala Gly Ser Leu Gln His Val Ala Glu Lys Leu Cys
            110   115   120

cgt gag ctg tat aac aaa gct gga gca cac agg tgc agc cct tgt aca   495
Arg Glu Leu Tyr Asn Lys Ala Gly Ala His Arg Cys Ser Pro Cys Thr
            125   130   135

gaa caa tgg aaa tgg cat gga gac aat tgc tac cag ttc tat aaa gac   543
Glu Gln Trp Lys Trp His Gly Asp Asn Cys Tyr Gln Phe Tyr Lys Asp
    140   145   150

```
agc aaa agt tgg gag gac tgt aaa tat ttc tgc ctt agt gaa aac tct        591
Ser Lys Ser Trp Glu Asp Cys Lys Tyr Phe Cys Leu Ser Glu Asn Ser
155                     160             165                 170

acc atg ctg aag ata aac aaa caa gaa gac ctg gaa ttt gcc gcg tct        639
Thr Met Leu Lys Ile Asn Lys Gln Glu Asp Leu Glu Phe Ala Ala Ser
                175                 180                 185

cag agc tac tct gag ttt ttc tac tct tat tgg aca ggg ctt ttg cgc        687
Gln Ser Tyr Ser Glu Phe Phe Tyr Ser Tyr Trp Thr Gly Leu Leu Arg
                190                 195                 200

cct gac agt ggc aag gcc tgg ctg tgg atg gat gga acc cct ttc act        735
Pro Asp Ser Gly Lys Ala Trp Leu Trp Met Asp Gly Thr Pro Phe Thr
                205                 210                 215

tct gaa ctg ttc cat att ata ata gat gtc acc agc cca aga agc aga        783
Ser Glu Leu Phe His Ile Ile Ile Asp Val Thr Ser Pro Arg Ser Arg
        220                 225                 230

gac tgt gtg gcc atc ctt aat ggg atg atc ttc tca aag gac tgc aaa        831
Asp Cys Val Ala Ile Leu Asn Gly Met Ile Phe Ser Lys Asp Cys Lys
235                 240                 245                 250

gaa ttg aag cgt tgt gtc tgt gag aga agg gca gga atg gtg aag cca        879
Glu Leu Lys Arg Cys Val Cys Glu Arg Arg Ala Gly Met Val Lys Pro
                255                 260                 265

gag agc ctc cat gtc ccc cct gaa aca tta ggc gaa ggt gac               921
Glu Ser Leu His Val Pro Pro Glu Thr Leu Gly Glu Gly Asp
                270                 275                 280

tgattcgccc tctgcaacta caaatagcag agtgagccag gcggtgccaa agcaagggct      981
agttgagaca ttgggaaatg gaacataatc aggaaagact atctctctga ctagtacaaa     1041
atgggttctc gtgtttcctg ttcaggatca ccagcatttc tgagcttggg tttatgcacg     1101
tatttaacag tcacaagaag tcttatttac atgccaccaa ccaacctcag aaacccataa     1161
tgtcatctgc cttcttggct tagagataac ttttagctct ctttcttctc aatgtctaat     1221
atcacctccc tgttttcatg tcttccttac acttggtgga ataagaaact ttttgaagta     1281
gaggaaatac attgaggtaa catccttttc tctgacagtc aagtagtcca tcagaaattg     1341
gcagtcactt cccagattgt accagcaaat acacaaggaa ttcttttttgt ttgtttcagt     1401
tcatactagt cccttcccaa tccatcagta aagaccccat ctgccttgtc catgccgttt     1461
cccaacaggg atgtcacttg atatgagaat ctcaaatctc aatgccttat aagcattcct     1521
tcctgtgtcc attaagactc tgataattgt ctcccctcca taggaatttc tcccaggaaa     1581
gaaatatatc cccatctccg tttcatatca gaactaccgt ccccgatatt cccttcagag     1641
agattaaaga ccagaaaaaa gtgagcctct tcatctgcac ctgtaatagt ttcagttcct     1701
attttcttcc attgacccat atttatacct ttcaggtact gaagatttaa taataataaa     1761
tgtaaatact gtgaagtgtg tgtgattttta caatggactt atggttggtg ggaaaattca    1821
gcatggaaat gcttttcaaa atatgatagc ggtcattatt ttgattgtgc cttactgaaa     1881
```

```
gtttttgggg aatttacaag agtactgatt acatgattat ctggagaaaa taagatgtct    1941

ttgaaataca tgttggcttc aagaaaacag ttttaacgtt ttcctaaaat gaaatctttt    2001

gaggtgagct tatggcatca acacatggtt gatgaggaag ctgagttgca ttagtgcaca    2061

tgatttccag tcaggtcatg ggaaatgaac agagacagtg acatctttgt agctgctcct    2121

ttgtgaggca cttctttctt gagatgactc catgcacaaa tataacaggg atcattggga    2181

atgacaccat cacagccacc aagnttattg ggttactgat aat                      2224
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<210> 23
<211> 280
<212> PRT
<213> Homo sapiens

<220>
<221> misc_feature
<223> n = a or c or g or t

<400> 23

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Met Gln Ala Lys Tyr Ser Ser Thr Arg Asp Met Leu Asp Asp Asp Gly
1               5                   10                  15

Asp Thr Thr Met Ser Leu His Ser Gln Ala Ser Ala Thr Thr Arg His
            20                  25                  30

Pro Glu Pro Arg Arg Thr Glu His Arg Ala Pro Ser Ser Thr Trp Arg
        35                  40                  45

Pro Val Ala Leu Thr Leu Leu Thr Leu Cys Leu Val Leu Leu Ile Gly
    50                  55                  60

Leu Ala Ala Leu Gly Leu Leu Phe Phe Gln Tyr Tyr Gln Leu Ser Asn
65                  70                  75                  80

Thr Gly Gln Asp Thr Ile Ser Gln Met Glu Glu Arg Leu Gly Asn Thr
                85                  90                  95

Ser Gln Glu Leu Gln Ser Leu Gln Val Gln Asn Ile Lys Leu Ala Gly
            100                 105                 110

Ser Leu Gln His Val Ala Glu Lys Leu Cys Arg Glu Leu Tyr Asn Lys
        115                 120                 125

Ala Gly Ala His Arg Cys Ser Pro Cys Thr Glu Gln Trp Lys Trp His
    130                 135                 140

Gly Asp Asn Cys Tyr Gln Phe Tyr Lys Asp Ser Lys Ser Trp Glu Asp
145                 150                 155                 160
```

```
Cys Lys Tyr Phe Cys Leu Ser Glu Asn Ser Thr Met Leu Lys Ile Asn
                165                 170                 175


Lys Gln Glu Asp Leu Glu Phe Ala Ala Ser Gln Ser Tyr Ser Glu Phe
                180             185                 190


Phe Tyr Ser Tyr Trp Thr Gly Leu Leu Arg Pro Asp Ser Gly Lys Ala
                195             200             205


Trp Leu Trp Met Asp Gly Thr Pro Phe Thr Ser Glu Leu Phe His Ile
    210             215                 220


Ile Ile Asp Val Thr Ser Pro Arg Ser Arg Asp Cys Val Ala Ile Leu
225             230                 235                 240


Asn Gly Met Ile Phe Ser Lys Asp Cys Lys Glu Leu Lys Arg Cys Val
                245             250                 255


Cys Glu Arg Arg Ala Gly Met Val Lys Pro Glu Ser Leu His Val Pro
                260             265                 270


Pro Glu Thr Leu Gly Glu Gly Asp
                275             280


<210>   24
<211>   996
<212>   DNA
<213>   Homo sapiens

<220>
<221>   CDS
<222>   (38)..(979)

<400>   24
ccgaccacat ttcactctca ccgctgtggg aatccag atg cag gcc aag tac agc      55
                                        Met Gln Ala Lys Tyr Ser
                                        1               5

agc acg atg gac atg ctg gat gat gat ggg gac acc acc atg agc ctg     103
Ser Thr Met Asp Met Leu Asp Asp Asp Gly Asp Thr Thr Met Ser Leu
            10              15                  20

cat tct caa gcc tct gcc aca act cgg cat cca gag ccc cgg cgc aca     151
His Ser Gln Ala Ser Ala Thr Thr Arg His Pro Glu Pro Arg Arg Thr
        25              30                  35

gag cac agg gct ccc tct tca acg tgg cga cca gtg gcc ctg acc ctg     199
Glu His Arg Ala Pro Ser Ser Thr Trp Arg Pro Val Ala Leu Thr Leu
    40              45                  50

ctg act ttg tgc ttg gtg ctg ctg ata ggg ctg gca gcc ctg ggg ctt     247
Leu Thr Leu Cys Leu Val Leu Leu Ile Gly Leu Ala Ala Leu Gly Leu
55              60                  65                  70

ttg ttt ttt cag tac tac cag ctc tcc aat act ggt caa gac acc att     295
Leu Phe Phe Gln Tyr Tyr Gln Leu Ser Asn Thr Gly Gln Asp Thr Ile
```

```
Leu Phe Phe Gln Tyr Tyr Gln Leu Ser Asn Thr Gly Gln Asp Thr Ile
                  75              80              85

tct caa atg gaa gaa aga tta gga aat acg tcc caa gag ttg caa tct      343
Ser Gln Met Glu Glu Arg Leu Gly Asn Thr Ser Gln Glu Leu Gln Ser
            90              95             100

ctt caa gtc cag aat ata aag ctt gca gga agt ctg cag cat gtg gct      391
Leu Gln Val Gln Asn Ile Lys Leu Ala Gly Ser Leu Gln His Val Ala
           105             110             115

gaa aaa ctc tgt cgt gag ctg tat aac aaa gct gga ggc tat aca aga      439
Glu Lys Leu Cys Arg Glu Leu Tyr Asn Lys Ala Gly Gly Tyr Thr Arg
           120             125             130

aac atg gtg cca gca tct gct tct tct gag agc ctc agg cag ctt cca      487
Asn Met Val Pro Ala Ser Ala Ser Ser Glu Ser Leu Arg Gln Leu Pro
135             140             145             150

cac atg ggg gaa agt gca gca gca cac agg tgc agc cct tgt aca gaa      535
His Met Gly Glu Ser Ala Ala Ala His Arg Cys Ser Pro Cys Thr Glu
                155             160             165

caa tgg aaa tgg cat gga gac aat tgc tac cag ttc tat aaa gac agc      583
Gln Trp Lys Trp His Gly Asp Asn Cys Tyr Gln Phe Tyr Lys Asp Ser
            170             175             180

aaa agt tgg gag gac tgt aaa tat ttc tgc ctt agt gaa aac tct acc      631
Lys Ser Trp Glu Asp Cys Lys Tyr Phe Cys Leu Ser Glu Asn Ser Thr
            185             190             195

atg ctg aag ata aac aaa caa gaa gac ctg gaa ttt gcc gcg tct cag      679
Met Leu Lys Ile Asn Lys Gln Glu Asp Leu Glu Phe Ala Ala Ser Gln
        200             205             210

agc tac tct gag ttt ttc tac tct tat tgg aca ggg ctt ttg cgc cct      727
Ser Tyr Ser Glu Phe Phe Tyr Ser Tyr Trp Thr Gly Leu Leu Arg Pro
215             220             225             230

gac agt ggc aag gcc tgg ctg tgg atg gat gga acc cct ttc act tct      775
Asp Ser Gly Lys Ala Trp Leu Trp Met Asp Gly Thr Pro Phe Thr Ser
            235             240             245

gaa ctg ttc cat att ata ata gat gtc acc agc cca aga agc aga gac      823
Glu Leu Phe His Ile Ile Ile Asp Val Thr Ser Pro Arg Ser Arg Asp
            250             255             260

tgt gtg gcc atc ctt aat ggg atg atc ttc tca aag gac tgc aaa gaa      871
Cys Val Ala Ile Leu Asn Gly Met Ile Phe Ser Lys Asp Cys Lys Glu
            265             270             275

ttg aag cgt tgt gtc tgt gag aga agg gca gga atg gtg aag cca gag      919
Leu Lys Arg Cys Val Cys Glu Arg Arg Ala Gly Met Val Lys Pro Glu
            280             285             290

agc ctc cat gtc ccc cct gaa aca tta ggc gaa ggt gac atg cat cat      967
Ser Leu His Val Pro Pro Glu Thr Leu Gly Glu Gly Asp Met His His
295             300             305             310

cat cat cat cat tagcctaggt tctagac                                   996
His His His His
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<210> 25
<211> 314
<212> PRT
<213> Homo sapiens

<400> 25

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Met Gln Ala Lys Tyr Ser Ser Thr Met Asp Met Leu Asp Asp Asp Gly
1               5                   10                  15


Asp Thr Thr Met Ser Leu His Ser Gln Ala Ser Ala Thr Thr Arg His
            20                  25                  30


Pro Glu Pro Arg Arg Thr Glu His Arg Ala Pro Ser Ser Thr Trp Arg
        35                  40                  45


Pro Val Ala Leu Thr Leu Leu Thr Leu Cys Leu Val Leu Leu Ile Gly
    50                  55                  60


Leu Ala Ala Leu Gly Leu Leu Phe Phe Gln Tyr Tyr Gln Leu Ser Asn
65                  70                  75                  80


Thr Gly Gln Asp Thr Ile Ser Gln Met Glu Glu Arg Leu Gly Asn Thr
                85                  90                  95


Ser Gln Glu Leu Gln Ser Leu Gln Val Gln Asn Ile Lys Leu Ala Gly
            100                 105                 110


Ser Leu Gln His Val Ala Glu Lys Leu Cys Arg Glu Leu Tyr Asn Lys
        115                 120                 125


Ala Gly Gly Tyr Thr Arg Asn Met Val Pro Ala Ser Ala Ser Ser Glu
    130                 135                 140


Ser Leu Arg Gln Leu Pro His Met Gly Glu Ser Ala Ala Ala His Arg
145                 150                 155                 160


Cys Ser Pro Cys Thr Glu Gln Trp Lys Trp His Gly Asp Asn Cys Tyr
                165                 170                 175


Gln Phe Tyr Lys Asp Ser Lys Ser Trp Glu Asp Cys Lys Tyr Phe Cys
            180                 185                 190


Leu Ser Glu Asn Ser Thr Met Leu Lys Ile Asn Lys Gln Glu Asp Leu
        195                 200                 205


Glu Phe Ala Ala Ser Gln Ser Tyr Ser Glu Phe Phe Tyr Ser Tyr Trp
    210                 215                 220
```

```
Thr Gly Leu Leu Arg Pro Asp Ser Gly Lys Ala Trp Leu Trp Met Asp
225             230             235             240

Gly Thr Pro Phe Thr Ser Glu Leu Phe His Ile Ile Ile Asp Val Thr
            245             250             255

Ser Pro Arg Ser Arg Asp Cys Val Ala Ile Leu Asn Gly Met Ile Phe
            260             265             270

Ser Lys Asp Cys Lys Glu Leu Lys Arg Cys Val Cys Glu Arg Arg Ala
            275             280             285

Gly Met Val Lys Pro Glu Ser Leu His Val Pro Pro Glu Thr Leu Gly
        290             295             300

Glu Gly Asp Met His His His His His His
305                 310
```

```
<210>   26
<211>   2125
<212>   DNA
<213>   Homo sapiens

<220>
<221>   misc_feature
<223>   n = a or c or g or t


<220>
<221>   CDS
<222>   (82)..(822)
<223>   Xaa = Unknown or other


<400>   26
tgcttcctga actagctcac agtagcccgg cggcccaggg caatccgacc acatttcact      60

ctcaccgctg taggaatcca g atg cag gcc aag tac agc agc acg agg gac      111
                         Met Gln Ala Lys Tyr Ser Ser Thr Arg Asp
                         1               5                   10

atg ctg gat gat gat ggg gac acc acc atg agc ctg cat tct caa gcc      159
Met Leu Asp Asp Asp Gly Asp Thr Thr Met Ser Leu His Ser Gln Ala
                15              20              25

tct gcc aca act cgg cat cca gag ccc cgg cgc aca gtt ttt cag tac      207
Ser Ala Thr Thr Arg His Pro Glu Pro Arg Arg Thr Val Phe Gln Tyr
            30              35              40

tac cag ctc tcc aat act ggt caa gac acc att tct caa atg gaa gaa      255
Tyr Gln Leu Ser Asn Thr Gly Gln Asp Thr Ile Ser Gln Met Glu Glu
        45              50              55

aga tta gga aat acg tcc caa gag ttg caa tct ctt caa gtc cag aat      303
Arg Leu Gly Asn Thr Ser Gln Glu Leu Gln Ser Leu Gln Val Gln Asn
    60              65              70
```

```
ata aag ctt gca gga agt ctg cag cat gtg gct gaa aaa ctc tgt cgt        351
Ile Lys Leu Ala Gly Ser Leu Gln His Val Ala Glu Lys Leu Cys Arg
75              80              85                      90

gag ctg tat aac aaa gct gga gca cac agg tgc agc cct tgt aca gaa        399
Glu Leu Tyr Asn Lys Ala Gly Ala His Arg Cys Ser Pro Cys Thr Glu
                95              100                 105

caa tgg aaa tgg cat gga gac aat tgc tac cag ttc tat aaa gac agc        447
Gln Trp Lys Trp His Gly Asp Asn Cys Tyr Gln Phe Tyr Lys Asp Ser
            110             115                 120

aaa agt tgg gag gac tgt aaa tat ttc tgc ctt agt gaa aac tct acc        495
Lys Ser Trp Glu Asp Cys Lys Tyr Phe Cys Leu Ser Glu Asn Ser Thr
            125             130             135

atg ctg aag ata aac aaa caa gaa gac ctg gaa ttt gcc gcg tct cag       543
Met Leu Lys Ile Asn Lys Gln Glu Asp Leu Glu Phe Ala Ala Ser Gln
    140             145             150

agc tac tct gag ttt ttc tac tct tat tgg aca ggg ctt ttg cgc cct       591
Ser Tyr Ser Glu Phe Phe Tyr Ser Tyr Trp Thr Gly Leu Leu Arg Pro
155             160             165                 170

gac agt ggc aag gcc tgg ctg tgg atg gat gga acc cct ttc act tct       639
Asp Ser Gly Lys Ala Trp Leu Trp Met Asp Gly Thr Pro Phe Thr Ser
            175             180             185

gaa ctg ttc cat att ata ata gat gtc acc agc cca aga agc aga gac       687
Glu Leu Phe His Ile Ile Ile Asp Val Thr Ser Pro Arg Ser Arg Asp
        190             195             200

tgt gtg gcc atc ctt aat ggg atg atc ttc tca aag gac tgc aaa gaa       735
Cys Val Ala Ile Leu Asn Gly Met Ile Phe Ser Lys Asp Cys Lys Glu
        205             210             215

ttg aag cgt tgt gtc tgt gag aga agg gca gga atg gtg aag cca gag       783
Leu Lys Arg Cys Val Cys Glu Arg Arg Ala Gly Met Val Lys Pro Glu
    220             225             230

agc ctc cat gtc ccc cct gaa aca tta ggc gaa ggt gac tgattcgccc       832
Ser Leu His Val Pro Pro Glu Thr Leu Gly Glu Gly Asp
235             240             245

tctgcaacta caaatagcag agtgagccag gcggtgccaa agcaagggct agttgagaca     892

ttgggaaatg gaacataatc aggaaagact atctctctga ctagtacaaa atgggttctc     952

gtgtttcctg ttcaggatca ccagcatttc tgagcttggg tttatgcacg tatttaacag    1012

tcacaagaag tcttatttac atgccaccaa ccaacctcag aaacccataa tgtcatctgc    1072

cttcttggct tagagataac ttttagctct ctttcttctc aatgtctaat atcacctccc    1132

tgttttcatg tcttccttac acttggtgga ataagaaact ttttgaagta gaggaaatac    1192

attgaggtaa catccttttc tctgacagtc aagtagtcca tcagaaattg gcagtcactt    1252

cccagattgt accagcaaat acacaaggaa ttcttttttgt ttgtttcagt tcatactagt    1312

cccttcccaa tccatcagta aagaccccat ctgccttgtc catgccgttt cccaacaggg    1372

atgtcacttg atatgagaat ctcaaatctc aatgccttat aagcattcct tcctgtgtcc    1432
```

```
attaagactc tgataattgt ctcccctcca taggaatttc tcccaggaaa gaaatatatc    1492

cccatctccg tttcatatca gaactaccgt ccccgatatt cccttcagag agattaaaga    1552

ccagaaaaaa gtgagcctct tcatctgcac ctgtaatagt ttcagttcct attttcttcc    1612

attgacccat atttatacct ttcaggtact gaagatttaa taataataaa tgtaaatact    1672

gtgaagtgtg tgtgatttta caatggactt atggttggtg ggaaaattca gcatggaaat    1732

gcttttcaaa atatgatagc ggtcattatt ttgattgtgc cttactgaaa gttttggggg    1792

aatttacaag agtactgatt acatgattat ctggagaaaa taagatgtct ttgaaataca    1852

tgttggcttc aagaaaacag ttttaacgtt ttcctaaaat gaaatctttt gaggtgagct    1912

tatggcatca acacatggtt gatgaggaag ctgagttgca ttagtgcaca tgatttccag    1972

tcaggtcatg ggaaatgaac agagacagtg acatctttgt agctgctcct ttgtgaggca    2032

cttctttctt gagatgactc catgcacaaa tataacaggg atcattggga atgacaccat    2092

cacagccacc aagnttattg ggttactgat aat                                 2125
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<210> 27
<211> 247
<212> PRT
<213> Homo sapiens

<220>
<221> misc_feature
<223> n = a or c or g or t

<400> 27

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Met Gln Ala Lys Tyr Ser Ser Thr Arg Asp Met Leu Asp Asp Asp Gly
1               5                   10                  15

Asp Thr Thr Met Ser Leu His Ser Gln Ala Ser Ala Thr Thr Arg His
            20                  25                  30

Pro Glu Pro Arg Arg Thr Val Phe Gln Tyr Tyr Gln Leu Ser Asn Thr
        35                  40                  45

Gly Gln Asp Thr Ile Ser Gln Met Glu Glu Arg Leu Gly Asn Thr Ser
    50                  55                  60

Gln Glu Leu Gln Ser Leu Gln Val Gln Asn Ile Lys Leu Ala Gly Ser
65                  70                  75                  80

Leu Gln His Val Ala Glu Lys Leu Cys Arg Glu Leu Tyr Asn Lys Ala
                85                  90                  95

Gly Ala His Arg Cys Ser Pro Cys Thr Glu Gln Trp Lys Trp His Gly
                100                 105                 110
```

Asp Asn Cys Tyr Gln Phe Tyr Lys Asp Ser Lys Ser Trp Glu Asp Cys
    115   120   125

Lys Tyr Phe Cys Leu Ser Glu Asn Ser Thr Met Leu Lys Ile Asn Lys
   130   135   140

Gln Glu Asp Leu Glu Phe Ala Ala Ser Gln Ser Tyr Ser Glu Phe Phe
145   150   155   160

Tyr Ser Tyr Trp Thr Gly Leu Leu Arg Pro Asp Ser Gly Lys Ala Trp
          165   170   175

Leu Trp Met Asp Gly Thr Pro Phe Thr Ser Glu Leu Phe His Ile Ile
        180   185   190

Ile Asp Val Thr Ser Pro Arg Ser Arg Asp Cys Val Ala Ile Leu Asn
        195   200   205

Gly Met Ile Phe Ser Lys Asp Cys Lys Glu Leu Lys Arg Cys Val Cys
   210   215   220

Glu Arg Arg Ala Gly Met Val Lys Pro Glu Ser Leu His Val Pro Pro
225   230   235   240

Glu Thr Leu Gly Glu Gly Asp
          245

<210> 28
<211> 5059
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (199)..(2457)

<400> 28
cgggaggaat ggaaggagaa ggcggaatgt gggagggctc aggggatgt gggagggacg   60

aacggagaag ggggagagag gggggtccag tctcccctgg ccgagcattt ttttttttgg   120

aagtcctagg actgatctcc aggaccagca ctcttctccc agcccttagg gtcctgctcg   180

gccaaggcct tccctgcc atg cga cct gtc agt gtc tgg cag tgg agc ccc   231
                      Met Arg Pro Val Ser Val Trp Gln Trp Ser Pro
                      1   5   10

tgg ggg ctg ctg ctg tgc ctg ctg tgc agt tcg tgc ttg ggg tct ccg   279
Trp Gly Leu Leu Leu Cys Leu Leu Cys Ser Ser Cys Leu Gly Ser Pro
        15   20   25

tcc cct tcc acg ggc cct gag aag aag gcc ggg agc cag ggg ctt cgg   327
Ser Pro Ser Thr Gly Pro Glu Lys Lys Ala Gly Ser Gln Gly Leu Arg
        30   35   40

```
ttc cgg ctg gct ggc ttc ccc agg aag ccc tac gag ggc cgc gtg gag      375
Phe Arg Leu Ala Gly Phe Pro Arg Lys Pro Tyr Glu Gly Arg Val Glu
    45              50                  55

ata cag cga gct ggt gaa tgg ggc acc atc tgc gat gat gac ttc acg      423
Ile Gln Arg Ala Gly Glu Trp Gly Thr Ile Cys Asp Asp Asp Phe Thr
60                  65                  70                  75

ctg cag gct gcc cac atc ctc tgc cgg gag ctg ggc ttc aca gag gcc      471
Leu Gln Ala Ala His Ile Leu Cys Arg Glu Leu Gly Phe Thr Glu Ala
                80                  85                  90

aca ggc tgg acc cac agt gcc aaa tat ggc cct gga aca ggc cgc atc      519
Thr Gly Trp Thr His Ser Ala Lys Tyr Gly Pro Gly Thr Gly Arg Ile
            95                  100                 105

tgg ctg gac aac ttg agc tgc agt ggg acc gag cag agt gtg act gaa      567
Trp Leu Asp Asn Leu Ser Cys Ser Gly Thr Glu Gln Ser Val Thr Glu
        110                 115                 120

tgt gcc tcc cgg ggc tgg ggg aac agt gac tgt acg cac gat gag gat      615
Cys Ala Ser Arg Gly Trp Gly Asn Ser Asp Cys Thr His Asp Glu Asp
    125                 130                 135

gct ggg gtc atc tgc aaa gac cag cgc ctc cct ggc ttc tcg gac tcc      663
Ala Gly Val Ile Cys Lys Asp Gln Arg Leu Pro Gly Phe Ser Asp Ser
140                 145                 150                 155

aat gtc att gag gta gag cat cac ctg caa gtg gag gag gtg cga att      711
Asn Val Ile Glu Val Glu His His Leu Gln Val Glu Glu Val Arg Ile
                160                 165                 170

cga ccc gcc gtt ggg tgg ggc aga cga ccc ctg ccc gtg acg gag ggg      759
Arg Pro Ala Val Gly Trp Gly Arg Arg Pro Leu Pro Val Thr Glu Gly
                175                 180                 185

ctg gtg gaa gtc agg ctt cct gac ggc tgg tcg caa gtg tgc gac aaa      807
Leu Val Glu Val Arg Leu Pro Asp Gly Trp Ser Gln Val Cys Asp Lys
        190                 195                 200

ggc tgg agc gcc cac aac agc cac gtg gtc tgc ggg atg ctg ggc ttc      855
Gly Trp Ser Ala His Asn Ser His Val Val Cys Gly Met Leu Gly Phe
    205                 210                 215

ccc agc gaa aag agg gtc aac gcg gcc ttc tac agg ctg cta gcc caa      903
Pro Ser Glu Lys Arg Val Asn Ala Ala Phe Tyr Arg Leu Leu Ala Gln
220                 225                 230                 235

cgg cag caa cac tcc ttt ggt ctg cat ggg gtg gcg tgc gtg ggc acg      951
Arg Gln Gln His Ser Phe Gly Leu His Gly Val Ala Cys Val Gly Thr
                240                 245                 250

gag gcc cac ctc tcc ctc tgt tcc ctg gag ttc tat cgt gcc aat gac      999
Glu Ala His Leu Ser Leu Cys Ser Leu Glu Phe Tyr Arg Ala Asn Asp
                255                 260                 265

acc gcc agg tgc cct ggg ggg ggc cct gca gtg gtg agc tgt gtg cca     1047
Thr Ala Arg Cys Pro Gly Gly Gly Pro Ala Val Val Ser Cys Val Pro
                270                 275                 280

ggc cct gtc tac gcg gca tcc agt ggc cag aag aag caa caa cag tcg     1095
Gly Pro Val Tyr Ala Ala Ser Ser Gly Gln Lys Lys Gln Gln Gln Ser
285                 290                 295
```

```
aag cct cag ggg gag gtc cgt gtc cgt cta aag ggc ggc gcc cac cct      1143
Lys Pro Gln Gly Glu Val Arg Val Arg Leu Lys Gly Gly Ala His Pro
300             305             310             315

gga gag ggc cgg gta gaa gtc ctg aag gcc agc aca tgg ggc aca gtc      1191
Gly Glu Gly Arg Val Glu Val Leu Lys Ala Ser Thr Trp Gly Thr Val
                320             325             330

tgt tac cgc aag tgg gac ctg cat gca gcc agc gtg gtg tgt cgg gag      1239
Cys Tyr Arg Lys Trp Asp Leu His Ala Ala Ser Val Val Cys Arg Glu
            335             340             345

ctg ggc ttc ggg agt gct cga gaa gct ctg agt ggc gct cgc atg ggg      1287
Leu Gly Phe Gly Ser Ala Arg Glu Ala Leu Ser Gly Ala Arg Met Gly
            350             355             360

cag ggc atg ggt gct atc cac ctg agt gaa gtt cgc tgc tct gga cag      1335
Gln Gly Met Gly Ala Ile His Leu Ser Glu Val Arg Cys Ser Gly Gln
        365             370             375

gag ctc tcc ctc tgg aag tgc ccc cac aag aac atc aca gct gag gat      1383
Glu Leu Ser Leu Trp Lys Cys Pro His Lys Asn Ile Thr Ala Glu Asp
380             385             390             395

tgt tca cat agc cag gat gcc ggg gtc cgg tgc aac cta cct tac act      1431
Cys Ser His Ser Gln Asp Ala Gly Val Arg Cys Asn Leu Pro Tyr Thr
                400             405             410

ggg gca gag acc agg atc cga ctc agt ggg ggc cgc agc caa cat gag      1479
Gly Ala Glu Thr Arg Ile Arg Leu Ser Gly Gly Arg Ser Gln His Glu
            415             420             425

ggg cga gtc gag gtg caa ata ggg gga cct ggg ccc ctt cgc tgg ggc      1527
Gly Arg Val Glu Val Gln Ile Gly Gly Pro Gly Pro Leu Arg Trp Gly
            430             435             440

ctc atc tgt ggg gat gac tgg ggg acc ctg gag gcc atg gtg gcc tgt      1575
Leu Ile Cys Gly Asp Asp Trp Gly Thr Leu Glu Ala Met Val Ala Cys
        445             450             455

agg caa ctg ggt ctg ggc tac gcc aac cac ggc ctg cag gag acc tgg      1623
Arg Gln Leu Gly Leu Gly Tyr Ala Asn His Gly Leu Gln Glu Thr Trp
460             465             470             475

tac tgg gac tct ggg aat ata aca gag gtg gtg atg agt gga gtg cgc      1671
Tyr Trp Asp Ser Gly Asn Ile Thr Glu Val Val Met Ser Gly Val Arg
                480             485             490

tgc aca ggg act gag ctg tcc ctg gat cag tgt gcc cat cat ggc acc      1719
Cys Thr Gly Thr Glu Leu Ser Leu Asp Gln Cys Ala His His Gly Thr
            495             500             505

cac atc acc tgc aag agg aca ggg acc cgc ttc act gct gga gtc atc      1767
His Ile Thr Cys Lys Arg Thr Gly Thr Arg Phe Thr Ala Gly Val Ile
            510             515             520

tgt tct gag act gca tca gat ctg ttg ctg cac tca gca ctg gtg cag      1815
Cys Ser Glu Thr Ala Ser Asp Leu Leu Leu His Ser Ala Leu Val Gln
        525             530             535

gag acc gcc tac atc gaa gac cgg ccc ctg cat atg ttg tac tgt gct      1863
Glu Thr Ala Tyr Ile Glu Asp Arg Pro Leu His Met Leu Tyr Cys Ala
540             545             550             555
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gcg gaa gag aac tgc ctg gcc agc tca gcc cgc tca gcc aac tgg ccc      1911
Ala Glu Glu Asn Cys Leu Ala Ser Ser Ala Arg Ser Ala Asn Trp Pro
                560                 565                 570

tat ggt cac cgg cgt ctg ctc cga ttc tcc tcc cag atc cac aac ctg      1959
Tyr Gly His Arg Arg Leu Leu Arg Phe Ser Ser Gln Ile His Asn Leu
                575                 580                 585

gga cga gct gac ttc agg ccc aag gct ggg cgc cac tcc tgg gtg tgg      2007
Gly Arg Ala Asp Phe Arg Pro Lys Ala Gly Arg His Ser Trp Val Trp
                590                 595                 600

cac gag tgc cat ggg cat tac cac agc atg gac ttc ttc act cac tat      2055
His Glu Cys His Gly His Tyr His Ser Met Asp Phe Phe Thr His Tyr
        605                 610                 615

gat atc ctc acc cca aat ggc acc aag gtg gct gag ggc cac aaa gct      2103
Asp Ile Leu Thr Pro Asn Gly Thr Lys Val Ala Glu Gly His Lys Ala
620                 625                 630                 635

agt ttc tgt ctc gaa gac act gag tgt cag gag gat gtc tcc aag cgg      2151
Ser Phe Cys Leu Glu Asp Thr Glu Cys Gln Glu Asp Val Ser Lys Arg
                640                 645                 650

tat gag tgt gcc aac ttt gga gag caa ggc atc act gtg ggt tgc tgg      2199
Tyr Glu Cys Ala Asn Phe Gly Glu Gln Gly Ile Thr Val Gly Cys Trp
                655                 660                 665

gat ctc tac cgg cat gac att gac tgt cag tgg att gac atc acg gat      2247
Asp Leu Tyr Arg His Asp Ile Asp Cys Gln Trp Ile Asp Ile Thr Asp
                670                 675                 680

gtg aag cca gga aac tac att ctc cag gtt gtc atc aac cca aac ttt      2295
Val Lys Pro Gly Asn Tyr Ile Leu Gln Val Val Ile Asn Pro Asn Phe
        685                 690                 695

gaa gta gca gag agt gac ttt acc aac aat gca atg aaa tgt aac tgc      2343
Glu Val Ala Glu Ser Asp Phe Thr Asn Asn Ala Met Lys Cys Asn Cys
700                 705                 710                 715

aaa tat gat gga cat aga atc tgg gtg cac aac tgc cac att ggt gat      2391
Lys Tyr Asp Gly His Arg Ile Trp Val His Asn Cys His Ile Gly Asp
                720                 725                 730

gcc ttc agt gaa gag gcc aac agg agg ttt gaa cgc tac cct ggc cag      2439
Ala Phe Ser Glu Glu Ala Asn Arg Arg Phe Glu Arg Tyr Pro Gly Gln
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acc agc aac cag att atc taagtgccac tgccctctgc aaaccaccac            2487
Thr Ser Asn Gln Ile Ile
                750

tggcccctaa tggcaggggt ctgaggctgc cattacctca ggagcttacc aagaaaccca   2547

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actaactgcc cacaaaagat ggcagcagct cattttcttt aataggaggt caggatggtc   2787

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tcgcctctcg cccccaggct tccgggtgac tgcttcctac tgctcgtgct gctgctctac   5007

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Cys Leu Leu Cys Ser Ser Cys Leu Gly Ser Pro Ser Pro Ser Thr Gly
                20                  25                  30


Pro Glu Lys Lys Ala Gly Ser Gln Gly Leu Arg Phe Arg Leu Ala Gly
            35                  40                  45


Phe Pro Arg Lys Pro Tyr Glu Gly Arg Val Glu Ile Gln Arg Ala Gly
        50                  55                  60


Glu Trp Gly Thr Ile Cys Asp Asp Asp Phe Thr Leu Gln Ala Ala His
65                  70                  75                  80


Ile Leu Cys Arg Glu Leu Gly Phe Thr Glu Ala Thr Gly Trp Thr His
                85                  90                  95


Ser Ala Lys Tyr Gly Pro Gly Thr Gly Arg Ile Trp Leu Asp Asn Leu
                100                 105                 110


Ser Cys Ser Gly Thr Glu Gln Ser Val Thr Glu Cys Ala Ser Arg Gly
                115                 120                 125


Trp Gly Asn Ser Asp Cys Thr His Asp Glu Asp Ala Gly Val Ile Cys
        130                 135                 140


Lys Asp Gln Arg Leu Pro Gly Phe Ser Asp Ser Asn Val Ile Glu Val
145                 150                 155                 160


Glu His His Leu Gln Val Glu Glu Val Arg Ile Arg Pro Ala Val Gly
                165                 170                 175


Trp Gly Arg Arg Pro Leu Pro Val Thr Glu Gly Leu Val Glu Val Arg
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               180                      185                         190

Leu Pro Asp Gly Trp Ser Gln Val Cys Asp Lys Gly Trp Ser Ala His
        195                 200                 205

Asn Ser His Val Val Cys Gly Met Leu Gly Phe Pro Ser Glu Lys Arg
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Val Asn Ala Ala Phe Tyr Arg Leu Leu Ala Gln Arg Gln Gln His Ser
225                 230                 235                     240

Phe Gly Leu His Gly Val Ala Cys Val Gly Thr Glu Ala His Leu Ser
                245                 250                 255

Leu Cys Ser Leu Glu Phe Tyr Arg Ala Asn Asp Thr Ala Arg Cys Pro
            260                 265                 270

Gly Gly Gly Pro Ala Val Val Ser Cys Val Pro Gly Pro Val Tyr Ala
            275                 280                 285

Ala Ser Ser Gly Gln Lys Lys Gln Gln Gln Ser Lys Pro Gln Gly Glu
        290                 295                 300

Val Arg Val Arg Leu Lys Gly Gly Ala His Pro Gly Glu Gly Arg Val
305                 310                 315                     320

Glu Val Leu Lys Ala Ser Thr Trp Gly Thr Val Cys Tyr Arg Lys Trp
                325                 330                 335

Asp Leu His Ala Ala Ser Val Val Cys Arg Glu Leu Gly Phe Gly Ser
            340                 345                 350

Ala Arg Glu Ala Leu Ser Gly Ala Arg Met Gly Gln Gly Met Gly Ala
        355                 360                 365

Ile His Leu Ser Glu Val Arg Cys Ser Gly Gln Glu Leu Ser Leu Trp
    370                 375                 380

Lys Cys Pro His Lys Asn Ile Thr Ala Glu Asp Cys Ser His Ser Gln
385                 390                 395                     400

Asp Ala Gly Val Arg Cys Asn Leu Pro Tyr Thr Gly Ala Glu Thr Arg
                405                 410                 415

Ile Arg Leu Ser Gly Gly Arg Ser Gln His Glu Gly Arg Val Glu Val
            420                 425                 430
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Gln Ile Gly Gly Pro Gly Pro Leu Arg Trp Gly Leu Ile Cys Gly Asp
    435   440   445

Asp Trp Gly Thr Leu Glu Ala Met Val Ala Cys Arg Gln Leu Gly Leu
    450   455   460

Gly Tyr Ala Asn His Gly Leu Gln Glu Thr Trp Tyr Trp Asp Ser Gly
465   470   475   480

Asn Ile Thr Glu Val Val Met Ser Gly Val Arg Cys Thr Gly Thr Glu
            485   490   495

Leu Ser Leu Asp Gln Cys Ala His His Gly Thr His Ile Thr Cys Lys
        500   505   510

Arg Thr Gly Thr Arg Phe Thr Ala Gly Val Ile Cys Ser Glu Thr Ala
        515   520   525

Ser Asp Leu Leu Leu His Ser Ala Leu Val Gln Glu Thr Ala Tyr Ile
    530   535   540

Glu Asp Arg Pro Leu His Met Leu Tyr Cys Ala Ala Glu Glu Asn Cys
545   550   555   560

Leu Ala Ser Ser Ala Arg Ser Ala Asn Trp Pro Tyr Gly His Arg Arg
        565   570   575

Leu Leu Arg Phe Ser Ser Gln Ile His Asn Leu Gly Arg Ala Asp Phe
        580   585   590

Arg Pro Lys Ala Gly Arg His Ser Trp Val Trp His Glu Cys His Gly
        595   600   605

His Tyr His Ser Met Asp Phe Phe Thr His Tyr Asp Ile Leu Thr Pro
    610   615   620

Asn Gly Thr Lys Val Ala Glu Gly His Lys Ala Ser Phe Cys Leu Glu
625   630   635   640

Asp Thr Glu Cys Gln Glu Asp Val Ser Lys Arg Tyr Glu Cys Ala Asn
            645   650   655

Phe Gly Glu Gln Gly Ile Thr Val Gly Cys Trp Asp Leu Tyr Arg His
        660   665   670

Asp Ile Asp Cys Gln Trp Ile Asp Ile Thr Asp Val Lys Pro Gly Asn
        675   680   685

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Tyr Ile Leu Gln Val Val Ile Asn Pro Asn Phe Glu Val Ala Glu Ser
    690             695             700


Asp Phe Thr Asn Asn Ala Met Lys Cys Asn Cys Lys Tyr Asp Gly His
705             710             715             720


Arg Ile Trp Val His Asn Cys His Ile Gly Asp Ala Phe Ser Glu Glu
            725             730             735


Ala Asn Arg Arg Phe Glu Arg Tyr Pro Gly Gln Thr Ser Asn Gln Ile
            740             745             750


Ile
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cctgcc atg cga cct gtc agt gtc tgg cag tgg agc ccc tgg ggg ctg        168
       Met Arg Pro Val Ser Val Trp Gln Trp Ser Pro Trp Gly Leu
       1               5                   10

ctg ctg tgc ctg ctg tgc agt tcg tgc ttg ggg tct cca tcc cct tcc      216
Leu Leu Cys Leu Leu Cys Ser Ser Cys Leu Gly Ser Pro Ser Pro Ser
15              20              25                      30

acg ggc cct gag aag aag gcc ggg agc cag ggg ctt cgg ttc cgg ctg      264
Thr Gly Pro Glu Lys Lys Ala Gly Ser Gln Gly Leu Arg Phe Arg Leu
                35              40              45

gct ggc ttc ccc agg aag ccc tac gag ggc cgc gtg gag ata cag cga      312
Ala Gly Phe Pro Arg Lys Pro Tyr Glu Gly Arg Val Glu Ile Gln Arg
            50              55              60

gct ggt gaa tgg ggc acc atc tgc gat gat gac ttc acg ctg cag gct      360
Ala Gly Glu Trp Gly Thr Ile Cys Asp Asp Asp Phe Thr Leu Gln Ala
        65              70              75

gcc cac atc ctc tgc cgg gag ctg ggc ttc aca gag gcc aca ggc tgg      408
Ala His Ile Leu Cys Arg Glu Leu Gly Phe Thr Glu Ala Thr Gly Trp
    80              85              90

acc cac agt gcc aaa tat ggc cct gga aca ggc cgc atc tgg ctg gac      456
Thr His Ser Ala Lys Tyr Gly Pro Gly Thr Gly Arg Ile Trp Leu Asp
95              100             105             110

aac ttg agc tgc agt ggg acc gag cag agt gtg act gaa tgt gcc tcc      504
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Asn Leu Ser Cys Ser Gly Thr Glu Gln Ser Val Thr Glu Cys Ala Ser
              115                 120                 125

cgg ggc tgg ggg aac agt gac tgt acg cac gat gag gat gct ggg gtc      552
Arg Gly Trp Gly Asn Ser Asp Cys Thr His Asp Glu Asp Ala Gly Val
              130                 135                 140

atc tgc aaa gac cag cgc ctc cct ggc ttc tcg gac tcc aat gtc att      600
Ile Cys Lys Asp Gln Arg Leu Pro Gly Phe Ser Asp Ser Asn Val Ile
              145                 150                 155

gag gcc cgt gtc cgt cta aag ggc ggc gcc cac cct gga gag ggc cgg      648
Glu Ala Arg Val Arg Leu Lys Gly Gly Ala His Pro Gly Glu Gly Arg
              160                 165                 170

gta gaa gtc ctg aag gcc agc aca tgg ggc aca gtc tgt gac cgc aag      696
Val Glu Val Leu Lys Ala Ser Thr Trp Gly Thr Val Cys Asp Arg Lys
175                 180                 185                 190

tgg gac ctg cat gca gcc agc gtg gtg tgt cgg gag ctg ggc ttc ggg      744
Trp Asp Leu His Ala Ala Ser Val Val Cys Arg Glu Leu Gly Phe Gly
                  195                 200                 205

agt gct cga gaa gct ctg agt ggc gct cgc atg ggg cag ggc atg ggt      792
Ser Ala Arg Glu Ala Leu Ser Gly Ala Arg Met Gly Gln Gly Met Gly
                  210                 215                 220

gct atc cac ctg agt gaa gtt cgc tgc tct gga cag gag ctc tcc ctc      840
Ala Ile His Leu Ser Glu Val Arg Cys Ser Gly Gln Glu Leu Ser Leu
              225                 230                 235

tgg aag tgc ccc cac aag aac atc aca gct gag gat tgt tca cat agc      888
Trp Lys Cys Pro His Lys Asn Ile Thr Ala Glu Asp Cys Ser His Ser
              240                 245                 250

cag gat gcc ggg gtc cgg tgc aac cta cct tac act ggg gca gag acc      936
Gln Asp Ala Gly Val Arg Cys Asn Leu Pro Tyr Thr Gly Ala Glu Thr
255                 260                 265                 270

agg atc cga ctc agt ggg ggc cgc agc caa cat gag ggg cga gtc gag      984
Arg Ile Arg Leu Ser Gly Gly Arg Ser Gln His Glu Gly Arg Val Glu
                  275                 280                 285

gtg caa ata ggg gga cct ggg ccc ctt cgc tgg ggc ctc atc tgt ggg     1032
Val Gln Ile Gly Gly Pro Gly Pro Leu Arg Trp Gly Leu Ile Cys Gly
                  290                 295                 300

gat gac tgg ggg acc ctg gag gcc atg gtg gcc tgt agg caa ctg ggt     1080
Asp Asp Trp Gly Thr Leu Glu Ala Met Val Ala Cys Arg Gln Leu Gly
              305                 310                 315

ctg ggc tac gcc aac cac ggc ctg cag gag acc tgg tac tgg gac tct     1128
Leu Gly Tyr Ala Asn His Gly Leu Gln Glu Thr Trp Tyr Trp Asp Ser
              320                 325                 330

ggg aat ata aca gag gtg gtg atg agt gga gtg cgc tgc aca ggg act     1176
Gly Asn Ile Thr Glu Val Val Met Ser Gly Val Arg Cys Thr Gly Thr
335                 340                 345                 350

gag ctg tcc ctg gat cag tgt gcc cat cat ggc acc cac atc acc tgc     1224
Glu Leu Ser Leu Asp Gln Cys Ala His His Gly Thr His Ile Thr Cys
              355                 360                 365
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aag agg aca ggg acc cgc ttc act gct gga gtc atc tgt tct gag act       1272
Lys Arg Thr Gly Thr Arg Phe Thr Ala Gly Val Ile Cys Ser Glu Thr
            370                 375                 380

gca tca gat ctg ttg ctg cac tca gca ctg gtg cag gag acc gcc tac       1320
Ala Ser Asp Leu Leu Leu His Ser Ala Leu Val Gln Glu Thr Ala Tyr
            385                 390                 395

atc gaa gac cgg ccc ctg cat atg ttg tac tgt gct gcg gaa gag aac       1368
Ile Glu Asp Arg Pro Leu His Met Leu Tyr Cys Ala Ala Glu Glu Asn
            400                 405                 410

tgc ctg gcc agc tca gcc cgc tca gcc aac tgg ccc tat ggt cac cgg       1416
Cys Leu Ala Ser Ser Ala Arg Ser Ala Asn Trp Pro Tyr Gly His Arg
415                 420                 425                 430

cgt ctg ctc cga ttc tcc tcc cag atc cac aac ctg gga cga gct gac       1464
Arg Leu Leu Arg Phe Ser Ser Gln Ile His Asn Leu Gly Arg Ala Asp
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ttc agg ccc aag gct ggg cgc cac tcc tgg gtg tgg cac gag tgc cat       1512
Phe Arg Pro Lys Ala Gly Arg His Ser Trp Val Trp His Glu Cys His
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ggg cat tac cac agc atg gac ttc ttc act cac tat gat atc ctc acc       1560
Gly His Tyr His Ser Met Asp Phe Phe Thr His Tyr Asp Ile Leu Thr
            465                 470                 475

cca aat ggc acc aag gtg gct gag ggc cac aaa gct agt ttc tgt ctc       1608
Pro Asn Gly Thr Lys Val Ala Glu Gly His Lys Ala Ser Phe Cys Leu
            480                 485                 490

gaa gac act gag tgt cag gag gat gtc tcc aag cgg tat gag tgt gcc       1656
Glu Asp Thr Glu Cys Gln Glu Asp Val Ser Lys Arg Tyr Glu Cys Ala
495                 500                 505                 510

aac ttt gga gag caa ggc atc act gtg ggt tgc tgg gat ctc tac cgg       1704
Asn Phe Gly Glu Gln Gly Ile Thr Val Gly Cys Trp Asp Leu Tyr Arg
                515                 520                 525

cat gac att gac tgt cag tgg att gac atc acg gat gtg aag cca gga       1752
His Asp Ile Asp Cys Gln Trp Ile Asp Ile Thr Asp Val Lys Pro Gly
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aac tac att ctc cag gtt gtc atc aac cca aac ttt gaa gta gca gag       1800
Asn Tyr Ile Leu Gln Val Val Ile Asn Pro Asn Phe Glu Val Ala Glu
            545                 550                 555

agt gac ttt acc aac aat gca atg aaa tgt aac tgc aaa tat gat gga       1848
Ser Asp Phe Thr Asn Asn Ala Met Lys Cys Asn Cys Lys Tyr Asp Gly
            560                 565                 570

cat aga atc tgg gtg cac aac tgc cac att ggt gat gcc ttc agt gaa       1896
His Arg Ile Trp Val His Asn Cys His Ile Gly Asp Ala Phe Ser Glu
575                 580                 585                 590

gag gcc aac agg agg ttt gaa cgc tac cct ggc cag acc agc aac cag       1944
Glu Ala Asn Arg Arg Phe Glu Arg Tyr Pro Gly Gln Thr Ser Asn Gln
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Ile Ile
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cagggccggg gccggagcgg ctctttgact cgcaccggta agagacccgg cgggaagaga   4400

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tccgggtgac tgcttcctac tgctcgtgct gctgctctac gcgccagtcg ggttctgcct   4520

cctcgtcctg cgcctctttc tcgggatcca cg                                4552
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1                5                10                15


Cys Leu Leu Cys Ser Ser Cys Leu Gly Ser Pro Ser Pro Ser Thr Gly
                20                25                30


Pro Glu Lys Lys Ala Gly Ser Gln Gly Leu Arg Phe Arg Leu Ala Gly
            35                40                45


Phe Pro Arg Lys Pro Tyr Glu Gly Arg Val Glu Ile Gln Arg Ala Gly
        50                55                60


Glu Trp Gly Thr Ile Cys Asp Asp Asp Phe Thr Leu Gln Ala Ala His
65                70                75                80


Ile Leu Cys Arg Glu Leu Gly Phe Thr Glu Ala Thr Gly Trp Thr His
                    85                90                95


Ser Ala Lys Tyr Gly Pro Gly Thr Gly Arg Ile Trp Leu Asp Asn Leu
                100                105                110


Ser Cys Ser Gly Thr Glu Gln Ser Val Thr Glu Cys Ala Ser Arg Gly
                115                120                125


Trp Gly Asn Ser Asp Cys Thr His Asp Glu Asp Ala Gly Val Ile Cys
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            130                      135                      140

Lys Asp Gln Arg Leu Pro Gly Phe Ser Asp Ser Asn Val Ile Glu Ala
145                     150                 155                 160


Arg Val Arg Leu Lys Gly Gly Ala His Pro Gly Glu Gly Arg Val Glu
                165                 170                 175


Val Leu Lys Ala Ser Thr Trp Gly Thr Val Cys Asp Arg Lys Trp Asp
            180                 185                 190


Leu His Ala Ala Ser Val Val Cys Arg Glu Leu Gly Phe Gly Ser Ala
        195                 200                 205


Arg Glu Ala Leu Ser Gly Ala Arg Met Gly Gln Gly Met Gly Ala Ile
        210                 215                 220


His Leu Ser Glu Val Arg Cys Ser Gly Gln Glu Leu Ser Leu Trp Lys
225                 230                 235                 240


Cys Pro His Lys Asn Ile Thr Ala Glu Asp Cys Ser His Ser Gln Asp
                245                 250                 255


Ala Gly Val Arg Cys Asn Leu Pro Tyr Thr Gly Ala Glu Thr Arg Ile
                260                 265                 270


Arg Leu Ser Gly Gly Arg Ser Gln His Glu Gly Arg Val Glu Val Gln
            275                 280                 285


Ile Gly Gly Pro Gly Pro Leu Arg Trp Gly Leu Ile Cys Gly Asp Asp
        290                 295                 300


Trp Gly Thr Leu Glu Ala Met Val Ala Cys Arg Gln Leu Gly Leu Gly
305                 310                 315                 320


Tyr Ala Asn His Gly Leu Gln Glu Thr Trp Tyr Trp Asp Ser Gly Asn
                325                 330                 335


Ile Thr Glu Val Val Met Ser Gly Val Arg Cys Thr Gly Thr Glu Leu
                340                 345                 350


Ser Leu Asp Gln Cys Ala His His Gly Thr His Ile Thr Cys Lys Arg
            355                 360                 365


Thr Gly Thr Arg Phe Thr Ala Gly Val Ile Cys Ser Glu Thr Ala Ser
        370                 375                 380
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Asp Leu Leu Leu His Ser Ala Leu Val Gln Glu Thr Ala Tyr Ile Glu
385   390   395   400

Asp Arg Pro Leu His Met Leu Tyr Cys Ala Ala Glu Glu Asn Cys Leu
                405   410   415

Ala Ser Ser Ala Arg Ser Ala Asn Trp Pro Tyr Gly His Arg Arg Leu
            420   425   430

Leu Arg Phe Ser Ser Gln Ile His Asn Leu Gly Arg Ala Asp Phe Arg
            435   440   445

Pro Lys Ala Gly Arg His Ser Trp Val Trp His Glu Cys His Gly His
    450   455   460

Tyr His Ser Met Asp Phe Phe Thr His Tyr Asp Ile Leu Thr Pro Asn
465   470   475   480

Gly Thr Lys Val Ala Glu Gly His Lys Ala Ser Phe Cys Leu Glu Asp
            485   490   495

Thr Glu Cys Gln Glu Asp Val Ser Lys Arg Tyr Glu Cys Ala Asn Phe
            500   505   510

Gly Glu Gln Gly Ile Thr Val Gly Cys Trp Asp Leu Tyr Arg His Asp
            515   520   525

Ile Asp Cys Gln Trp Ile Asp Ile Thr Asp Val Lys Pro Gly Asn Tyr
    530   535   540

Ile Leu Gln Val Val Ile Asn Pro Asn Phe Glu Val Ala Glu Ser Asp
545   550   555   560

Phe Thr Asn Asn Ala Met Lys Cys Asn Cys Lys Tyr Asp Gly His Arg
            565   570   575

Ile Trp Val His Asn Cys His Ile Gly Asp Ala Phe Ser Glu Glu Ala
            580   585   590

Asn Arg Arg Phe Glu Arg Tyr Pro Gly Gln Thr Ser Asn Gln Ile Ile
    595   600   605

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gttgttttgc tttctgtttc tgctgagtca ctaaattttg cctctttgtc cccaggtgct       180

gctcagcata aaagttaaaa gtgcaattca ggaagtactg ggattctgtg tagagccgag       240

gaaaccattt ccctaagaga agctctgttc cttggcttgt ccttccttcc cggaaggaa       300

gcttccgagg aacgaaggga gaagctttgt tttgcctgca gaagcagccc tgtgctcggc       360

tgagggttct cagctggctg tgaactgcgg agcattgtag gcgcctggct ggctcaggcc       420

aatgcagaag tctctccctt ctccaaagac ccaaatcccc acagaaccag cttcgagtta       480

ctttcccttc aaggggatta aaataattgt gatttgtggc gctctccgtt cgcggtggta       540

ttttcctgtt gtgttaaatg cctcttatta agtaatagat gtgatttatg tgaacgacga       600

aggggtgtgt ggtggattcg gtgattaatc agtgaattcc catccgctgg catctctcac       660

tgcccctctt gcgtgatgta agatcagacg taccctgcat tgaaaagtca agacacacgg       720

gcgtctcgct cgcgctcaca cacgctctgc ctcctctctc cagcacgcgc gcatccctcc       780

accttccaca tcctgctcca ggcaggagaa ggctgactgg ctggactcat tgagctgaag       840
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aatttccagt gacatttgta a atg acg ccg ctc ggt tcc agg ctc caa gcg       891
                        Met Thr Pro Leu Gly Ser Arg Leu Gln Ala
                         1               5                   10

gcc cct gcc gcc gcc gcc gcc gcc ggg ccg aag gtg ccg ccg agc agt       939
Ala Pro Ala Ala Ala Ala Ala Ala Gly Pro Lys Val Pro Pro Ser Ser
                 15                  20                  25

ctc cag cgc agg ctt cct tac cgg gcg acc aca atg tcc gag ttt ctc       987
Leu Gln Arg Arg Leu Pro Tyr Arg Ala Thr Thr Met Ser Glu Phe Leu
             30                  35                  40

ctc gcc tta ctc act ctc tcg gga tta ttg ccg att gcc agg gtg ctg      1035
Leu Ala Leu Leu Thr Leu Ser Gly Leu Leu Pro Ile Ala Arg Val Leu
         45                  50                  55

acc gtg gga gcc gac cga gat cag cag ttg tgt gat cct ggt gaa ttt      1083
Thr Val Gly Ala Asp Arg Asp Gln Gln Leu Cys Asp Pro Gly Glu Phe
     60                  65                  70

ctt tgc cac gat cac gtg act tgt gtc tcc cgg agc tgg ctg tgt gat      1131
Leu Cys His Asp His Val Thr Cys Val Ser Arg Ser Trp Leu Cys Asp
75                  80                  85                  90

ggg gac cct gac tgc cct gat gat tca gac gag tct tta gat acc tgt      1179
Gly Asp Pro Asp Cys Pro Asp Asp Ser Asp Glu Ser Leu Asp Thr Cys
                 95                  100                 105

ccc gag gag gta gaa atc aag tgc ccc ttg aat cac att gct tgc ctt      1227
Pro Glu Glu Val Glu Ile Lys Cys Pro Leu Asn His Ile Ala Cys Leu
             110                 115                 120
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ggt acc aac aaa tgt gtt cat tta tcc cag ctg tgc aat ggt gtc ttg      1275
Gly Thr Asn Lys Cys Val His Leu Ser Gln Leu Cys Asn Gly Val Leu
        125                     130                 135

gac tgc cca gat ggg tat gac gaa gga gta cat tgt cag gaa ctg tta      1323
Asp Cys Pro Asp Gly Tyr Asp Glu Gly Val His Cys Gln Glu Leu Leu
        140                 145                 150

tcc aat tgc caa cag ctg aat tgt cag tat aaa tgt aca atg gtc aga      1371
Ser Asn Cys Gln Gln Leu Asn Cys Gln Tyr Lys Cys Thr Met Val Arg
155                     160                 165                 170

aat agt aca aga tgt tac tgt gag gat gga ttc gaa ata aca gaa gat      1419
Asn Ser Thr Arg Cys Tyr Cys Glu Asp Gly Phe Glu Ile Thr Glu Asp
                    175                 180                 185

ggg aga agc tgt aaa gat caa gat gaa tgt gct gtt tat ggt aca tgc      1467
Gly Arg Ser Cys Lys Asp Gln Asp Glu Cys Ala Val Tyr Gly Thr Cys
                190                 195                 200

agc cag acc tgc aga aac aca cat gga tcc tac act tgc agt tgt gtg      1515
Ser Gln Thr Cys Arg Asn Thr His Gly Ser Tyr Thr Cys Ser Cys Val
            205                 210                 215

gaa ggc tac cta atg cag cca gac aac aga tct tgc aag gct aaa att      1563
Glu Gly Tyr Leu Met Gln Pro Asp Asn Arg Ser Cys Lys Ala Lys Ile
        220                 225                 230

gaa cct aca gat aga cca cct ata cta tta att gca aat ttt gaa aca      1611
Glu Pro Thr Asp Arg Pro Pro Ile Leu Leu Ile Ala Asn Phe Glu Thr
235                     240                 245                 250

att gag gtt ttc tat ctt aat gga agt aaa atg gca act cta agc tca      1659
Ile Glu Val Phe Tyr Leu Asn Gly Ser Lys Met Ala Thr Leu Ser Ser
                    255                 260                 265

gtc aat gga aat gaa att cat act ctg gat ttt att tat aat gaa gat      1707
Val Asn Gly Asn Glu Ile His Thr Leu Asp Phe Ile Tyr Asn Glu Asp
            270                 275                 280

gtg att tgt tgg att gaa tca aga gaa tct tca aat caa ctc aaa tgt      1755
Val Ile Cys Trp Ile Glu Ser Arg Glu Ser Ser Asn Gln Leu Lys Cys
        285                 290                 295

atc cag ata aca aaa gca gga gga tta aca gat gaa tgg aca atc aat      1803
Ile Gln Ile Thr Lys Ala Gly Gly Leu Thr Asp Glu Trp Thr Ile Asn
        300                 305                 310

att ctt caa tcc ttc cac aat gtg caa caa atg gcg att gac tgg ctc      1851
Ile Leu Gln Ser Phe His Asn Val Gln Gln Met Ala Ile Asp Trp Leu
315                     320                 325                 330

act cga aat ctc tat ttt gtg gac cat gtc ggt gac cgg atc ttt gtt      1899
Thr Arg Asn Leu Tyr Phe Val Asp His Val Gly Asp Arg Ile Phe Val
                    335                 340                 345

tgt aat tcc aac ggt tct gta tgt gtc acc ctg att gat ctg gag ctt      1947
Cys Asn Ser Asn Gly Ser Val Cys Val Thr Leu Ile Asp Leu Glu Leu
                350                 355                 360

cac aat cct aaa gca ata gca gta gat cca ata gca gga aaa ctt ttc      1995
His Asn Pro Lys Ala Ile Ala Val Asp Pro Ile Ala Gly Lys Leu Phe
            365                 370                 375
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ttt act gac tac ggg aat gtc gcc aaa gtg gag aga tgt gac atg gat      2043
Phe Thr Asp Tyr Gly Asn Val Ala Lys Val Glu Arg Cys Asp Met Asp
    380             385             390

ggg atg aac cga aca agg ata att gat tca aag aca gag cag cca gct      2091
Gly Met Asn Arg Thr Arg Ile Ile Asp Ser Lys Thr Glu Gln Pro Ala
395             400             405             410

gca ctg gca cta gac cta gtc aac aaa ttg gtt tac tgg gta gat ctt      2139
Ala Leu Ala Leu Asp Leu Val Asn Lys Leu Val Tyr Trp Val Asp Leu
            415             420             425

tac ttg gac tat gtg gga gta gtg gac tat caa gga aaa aat aga cac      2187
Tyr Leu Asp Tyr Val Gly Val Val Asp Tyr Gln Gly Lys Asn Arg His
            430             435             440

act gtc att caa ggc aga caa gtc aga cat ctt tat ggt ata act gtg      2235
Thr Val Ile Gln Gly Arg Gln Val Arg His Leu Tyr Gly Ile Thr Val
        445             450             455

ttt gaa gat tat ttg tat gca acc aat tct gat aac tac aat atc gta      2283
Phe Glu Asp Tyr Leu Tyr Ala Thr Asn Ser Asp Asn Tyr Asn Ile Val
    460             465             470

agg ata aac cga ttt aat ggg act gat att cac tca tta att aaa att      2331
Arg Ile Asn Arg Phe Asn Gly Thr Asp Ile His Ser Leu Ile Lys Ile
475             480             485             490

gag aat gct tgg gga atc cga att tat caa aaa aga act caa cca aca      2379
Glu Asn Ala Trp Gly Ile Arg Ile Tyr Gln Lys Arg Thr Gln Pro Thr
            495             500             505

gtc aga agc cat gca tgt gaa gtc gat cca tat gga atg cca ggg ggc      2427
Val Arg Ser His Ala Cys Glu Val Asp Pro Tyr Gly Met Pro Gly Gly
            510             515             520

tgt tca cac atc tgt cta ctc agc agc agt tac aaa act cgg act tgt      2475
Cys Ser His Ile Cys Leu Leu Ser Ser Ser Tyr Lys Thr Arg Thr Cys
            525             530             535

cgc tgc agg act ggc ttc aac ttg gga agt gat ggc agg tca tgc aaa      2523
Arg Cys Arg Thr Gly Phe Asn Leu Gly Ser Asp Gly Arg Ser Cys Lys
            540             545             550

aga cca aag aat gag ttg ttc ctc ttt tat ggg aaa gga cgc cca gga      2571
Arg Pro Lys Asn Glu Leu Phe Leu Phe Tyr Gly Lys Gly Arg Pro Gly
555             560             565             570

att gtt aga gga atg gac ttg aat acc aag ata gct gat gaa tac atg      2619
Ile Val Arg Gly Met Asp Leu Asn Thr Lys Ile Ala Asp Glu Tyr Met
            575             580             585

atc ccc ata gaa aat ctg gta aac cct cgt gct tta gac ttt cac gca      2667
Ile Pro Ile Glu Asn Leu Val Asn Pro Arg Ala Leu Asp Phe His Ala
            590             595             600

gaa acc aat tac atc tac ttt gct gac acc acc agt ttc cta att ggc      2715
Glu Thr Asn Tyr Ile Tyr Phe Ala Asp Thr Thr Ser Phe Leu Ile Gly
            605             610             615

cgg cag aag ata gat ggc aca gag aga gaa acc atc ctg aaa gat gat      2763
Arg Gln Lys Ile Asp Gly Thr Glu Arg Glu Thr Ile Leu Lys Asp Asp
    620             625             630
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ctg gat aat gta gag ggc att gct gtg gac tgg att gga aat aat ctt        2811
Leu Asp Asn Val Glu Gly Ile Ala Val Asp Trp Ile Gly Asn Asn Leu
635             640             645             650

tac tgg acc aat gat ggc cat agg aaa acc att aat gtg gct agg ctg        2859
Tyr Trp Thr Asn Asp Gly His Arg Lys Thr Ile Asn Val Ala Arg Leu
            655             660             665

gaa aaa gct tct cag agt cgg aag act ctt tta gag ggt gaa atg tct        2907
Glu Lys Ala Ser Gln Ser Arg Lys Thr Leu Leu Glu Gly Glu Met Ser
            670             675             680

cat ccc aga gga att gtg gtg gat cca att aat ggt tgg atg tat tgg        2955
His Pro Arg Gly Ile Val Val Asp Pro Ile Asn Gly Trp Met Tyr Trp
            685             690             695

aca gac tgg gag gaa gat gaa ata gat gac agc gtg gga agg att gag        3003
Thr Asp Trp Glu Glu Asp Glu Ile Asp Asp Ser Val Gly Arg Ile Glu
            700             705             710

aag gcc tgg atg gat gga ttc aat cgg cag att ttt gtg act tca aag        3051
Lys Ala Trp Met Asp Gly Phe Asn Arg Gln Ile Phe Val Thr Ser Lys
715             720             725             730

atg ctg tgg cca aac ggt tta act ctg gac ttt cac acc aac aca tta        3099
Met Leu Trp Pro Asn Gly Leu Thr Leu Asp Phe His Thr Asn Thr Leu
            735             740             745

tac tgg tgt gat gcc tat tac gat cat att gaa aaa gta ttt ttg aat        3147
Tyr Trp Cys Asp Ala Tyr Tyr Asp His Ile Glu Lys Val Phe Leu Asn
            750             755             760

ggg act cac agg aag att gtt tac agt ggg aga gag ttg aac cac cct        3195
Gly Thr His Arg Lys Ile Val Tyr Ser Gly Arg Glu Leu Asn His Pro
            765             770             775

ttc gga ctg tcg cat cat gga aat tat gtg ttc tgg act gat tat atg        3243
Phe Gly Leu Ser His His Gly Asn Tyr Val Phe Trp Thr Asp Tyr Met
            780             785             790

aat ggt tcc att ttt caa cta gat ttg ata aca agt gag gtg aca ttg        3291
Asn Gly Ser Ile Phe Gln Leu Asp Leu Ile Thr Ser Glu Val Thr Leu
795             800             805             810

ctg agg cat gaa aga cca ccc cta ttt ggg ctt cag att tat gat cca        3339
Leu Arg His Glu Arg Pro Pro Leu Phe Gly Leu Gln Ile Tyr Asp Pro
            815             820             825

cga aag caa caa ggt gac aat atg tgc cga gta aat aat ggg ggc tgt        3387
Arg Lys Gln Gln Gly Asp Asn Met Cys Arg Val Asn Asn Gly Gly Cys
            830             835             840

agt aca ctt tgc ttg gct atc cca gga ggc cgg gtg tgt gct tgt gcc        3435
Ser Thr Leu Cys Leu Ala Ile Pro Gly Gly Arg Val Cys Ala Cys Ala
            845             850             855

gat aat caa ctt ttg gat gaa aat ggg aca act tgc aca ttt aat cct        3483
Asp Asn Gln Leu Leu Asp Glu Asn Gly Thr Thr Cys Thr Phe Asn Pro
            860             865             870

gga gaa gca cta cct cac ata tgt aaa gct gga gag ttt cgc tgc aaa        3531
Gly Glu Ala Leu Pro His Ile Cys Lys Ala Gly Glu Phe Arg Cys Lys
875             880             885             890
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aac aga cac tgt atc caa gct cgg tgg aaa tgt gat ggc gac gat gac    3579
Asn Arg His Cys Ile Gln Ala Arg Trp Lys Cys Asp Gly Asp Asp Asp
                    895             900             905

tgc cta gac gga agc gat gag gat tca gta aac tgc ttc aat cat agc    3627
Cys Leu Asp Gly Ser Asp Glu Asp Ser Val Asn Cys Phe Asn His Ser
            910             915             920

tgt cct gat gat cag ttt aaa tgc cag aat aat cgc tgc atc ccc aag    3675
Cys Pro Asp Asp Gln Phe Lys Cys Gln Asn Asn Arg Cys Ile Pro Lys
            925             930             935

aga tgg ctt tgt gat gga gct aat gac tgt ggg agc aat gaa gat gaa    3723
Arg Trp Leu Cys Asp Gly Ala Asn Asp Cys Gly Ser Asn Glu Asp Glu
        940             945             950

tcc aat caa act tgc aca gcc aga aca tgc cag gta gac cag ttt tct    3771
Ser Asn Gln Thr Cys Thr Ala Arg Thr Cys Gln Val Asp Gln Phe Ser
955             960             965             970

tgc gga aat ggg cgt tgc att ccc aga gca tgg ctg tgt gac agg gaa    3819
Cys Gly Asn Gly Arg Cys Ile Pro Arg Ala Trp Leu Cys Asp Arg Glu
            975             980             985

gac gac tgt ggt gac cag aca gat gaa atg gca tct tgt gaa ttc cca    3867
Asp Asp Cys Gly Asp Gln Thr Asp Glu Met Ala Ser Cys Glu Phe Pro
            990             995             1000

act tgt gag cca cta acc caa ttc gta tgc aaa agt gga aga tgc    3912
Thr Cys Glu Pro Leu Thr Gln Phe Val Cys Lys Ser Gly Arg Cys
        1005            1010            1015

att agc agc aaa tgg cac tgc gac tct gat gac gac tgt ggg gac    3957
Ile Ser Ser Lys Trp His Cys Asp Ser Asp Asp Asp Cys Gly Asp
        1020            1025            1030

ggg agt gat gag gtg ggc tgt gtt cac tct tgc ttt gat aat cag    4002
Gly Ser Asp Glu Val Gly Cys Val His Ser Cys Phe Asp Asn Gln
        1035            1040            1045

ttc aga tgt tcc agt ggc aga tgc atc cca ggc cac tgg gcc tgt    4047
Phe Arg Cys Ser Ser Gly Arg Cys Ile Pro Gly His Trp Ala Cys
        1050            1055            1060

gat ggt gac aat gac tgt ggg gac ttc agt gat gaa gcc cag atc    4092
Asp Gly Asp Asn Asp Cys Gly Asp Phe Ser Asp Glu Ala Gln Ile
        1065            1070            1075

aat tgt act aaa gaa gag att cat tct cct gct ggt tgt aac gga    4137
Asn Cys Thr Lys Glu Glu Ile His Ser Pro Ala Gly Cys Asn Gly
        1080            1085            1090

aat gaa ttt cag tgc cac cct gat ggt aat tgc gtt cct gat ttg    4182
Asn Glu Phe Gln Cys His Pro Asp Gly Asn Cys Val Pro Asp Leu
        1095            1100            1105

tgg cgc tgt gat gga gaa aaa gac tgt gaa gat ggt agt gat gaa    4227
Trp Arg Cys Asp Gly Glu Lys Asp Cys Glu Asp Gly Ser Asp Glu
        1110            1115            1120

aaa ggt tgc aat ggt acc ata cga ttg tgt gac cac aaa acc aag    4272
Lys Gly Cys Asn Gly Thr Ile Arg Leu Cys Asp His Lys Thr Lys
        1125            1130            1135
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ttt tcc tgt  tgg agt aca ggg aga  tgc atc aac aaa gca  tgg gtg        4317
Phe Ser Cys  Trp Ser Thr Gly Arg  Cys Ile Asn Lys Ala  Trp Val
        1140                 1145                 1150

tgt gat gga  gat att gat tgc gaa  gat cag tca gat gaa  gat gac        4362
Cys Asp Gly  Asp Ile Asp Cys Glu  Asp Gln Ser Asp Glu  Asp Asp
        1155                 1160                 1165

tgt gac agt  ttc ttg tgt gga cca  ccc aag cat cct tgt  gct aat        4407
Cys Asp Ser  Phe Leu Cys Gly Pro  Pro Lys His Pro Cys  Ala Asn
        1170                 1175                 1180

gac acc tca  gtc tgc ctg cag cca  gag aaa ctc tgc aat  ggg aaa        4452
Asp Thr Ser  Val Cys Leu Gln Pro  Glu Lys Leu Cys Asn  Gly Lys
        1185                 1190                 1195

aag gat tgt  cct gat ggc tct gat  gaa ggc tat ctc tgt  gat gag        4497
Lys Asp Cys  Pro Asp Gly Ser Asp  Glu Gly Tyr Leu Cys  Asp Glu
        1200                 1205                 1210

tgt tcg ctg  aac aat gga ggc tgt  agc aac cac tgt tct  gtt gtt        4542
Cys Ser Leu  Asn Asn Gly Gly Cys  Ser Asn His Cys Ser  Val Val
        1215                 1220                 1225

cct gga aga  gga att gtc tgt tcc  tgc cct gaa gga ctt  caa ctc        4587
Pro Gly Arg  Gly Ile Val Cys Ser  Cys Pro Glu Gly Leu  Gln Leu
        1230                 1235                 1240

aac aaa gac  aat aaa aca tgt gaa  att gtg gat tat tgt  agc aat        4632
Asn Lys Asp  Asn Lys Thr Cys Glu  Ile Val Asp Tyr Cys  Ser Asn
        1245                 1250                 1255

cat cta aag  tgc agc caa gta tgt  gag cag cac aag cac  aca gtc        4677
His Leu Lys  Cys Ser Gln Val Cys  Glu Gln His Lys His  Thr Val
        1260                 1265                 1270

aag tgc tca  tgt tat gaa ggt tgg  aag ctg gat gta gac  ggt gaa        4722
Lys Cys Ser  Cys Tyr Glu Gly Trp  Lys Leu Asp Val Asp  Gly Glu
        1275                 1280                 1285

agt tgt aca  agt gtt gat cct ttt  gaa gca ttc atc atc  ttt tct        4767
Ser Cys Thr  Ser Val Asp Pro Phe  Glu Ala Phe Ile Ile  Phe Ser
        1290                 1295                 1300

att cgt cat  gag atc aga agg att  gat ctt cac aaa aga  gac tat        4812
Ile Arg His  Glu Ile Arg Arg Ile  Asp Leu His Lys Arg  Asp Tyr
        1305                 1310                 1315

agt cta ctt  gtt cct gga ttg aga  aac aca ata gca ctt  gat ttt        4857
Ser Leu Leu  Val Pro Gly Leu Arg  Asn Thr Ile Ala Leu  Asp Phe
        1320                 1325                 1330

cac ttc aat  caa agt tta ctt tat  tgg aca gat gtt gta  gaa gac        4902
His Phe Asn  Gln Ser Leu Leu Tyr  Trp Thr Asp Val Val  Glu Asp
        1335                 1340                 1345

aga ata tac  cgg gga aag ctt tct  gaa agt gga ggt gtc  agt gcc        4947
Arg Ile Tyr  Arg Gly Lys Leu Ser  Glu Ser Gly Gly Val  Ser Ala
        1350                 1355                 1360

att gaa gtg  gtt gtg gag cat ggc  ctg gct act cca gaa  ggc ctg        4992
Ile Glu Val  Val Val Glu His Gly  Leu Ala Thr Pro Glu  Gly Leu
        1365                 1370                 1375
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aca gtc gac   tgg ata gca gga aac   ata tac tgg ata gac   agc aat          5037
Thr Val Asp   Trp Ile Ala Gly Asn   Ile Tyr Trp Ile Asp   Ser Asn
        1380                1385                  1390

ctg gac caa   atc gaa gtg gcc aaa   cta gat ggc tcc cta   aga act          5082
Leu Asp Gln   Ile Glu Val Ala Lys   Leu Asp Gly Ser Leu   Arg Thr
        1395                1400                  1405

aca cta ata   gca gga gcc atg gaa   cac ccc agg gcc att   gct ttg          5127
Thr Leu Ile   Ala Gly Ala Met Glu   His Pro Arg Ala Ile   Ala Leu
        1410                1415                  1420

gac cca aga   tat gga att ctt ttc   tgg aca gac tgg gat   gca aat          5172
Asp Pro Arg   Tyr Gly Ile Leu Phe   Trp Thr Asp Trp Asp   Ala Asn
        1425                1430                  1435

ttt cct cgc   att gaa tct gcc tct   atg agt ggt gct ggg   aga aaa          5217
Phe Pro Arg   Ile Glu Ser Ala Ser   Met Ser Gly Ala Gly   Arg Lys
        1440                1445                  1450

acc atc tat   aaa gac atg aaa act   ggg gct tgg cct aat   gga cta          5262
Thr Ile Tyr   Lys Asp Met Lys Thr   Gly Ala Trp Pro Asn   Gly Leu
        1455                1460                  1465

act gtg gac   cac ttt gag aaa agg   ata gtg tgg aca gac   gcc agg          5307
Thr Val Asp   His Phe Glu Lys Arg   Ile Val Trp Thr Asp   Ala Arg
        1470                1475                  1480

tca gat gct   att tat tca gcc ctc   tat gat gga aca aac   atg ata          5352
Ser Asp Ala   Ile Tyr Ser Ala Leu   Tyr Asp Gly Thr Asn   Met Ile
        1485                1490                  1495

gaa atc atc   cga ggt cat gaa tac   ctt tcc cat ccc ttt   gct gtg          5397
Glu Ile Ile   Arg Gly His Glu Tyr   Leu Ser His Pro Phe   Ala Val
        1500                1505                  1510

tct cta tat   ggg agt gaa gtc tac   tgg aca gac tgg agg   acc aac          5442
Ser Leu Tyr   Gly Ser Glu Val Tyr   Trp Thr Asp Trp Arg   Thr Asn
        1515                1520                  1525

aca ttg tcc   aaa gcc aat aag tgg   aca ggg cag aat gtc   agt gtg          5487
Thr Leu Ser   Lys Ala Asn Lys Trp   Thr Gly Gln Asn Val   Ser Val
        1530                1535                  1540

att cag aaa   acc agt gca cag cca   ttt gac ctt cag ata   tac cat          5532
Ile Gln Lys   Thr Ser Ala Gln Pro   Phe Asp Leu Gln Ile   Tyr His
        1545                1550                  1555

ccc agt cgc   cag cca cag gct ccc   aat cct tgt gca gct   aat gat          5577
Pro Ser Arg   Gln Pro Gln Ala Pro   Asn Pro Cys Ala Ala   Asn Asp
        1560                1565                  1570

ggc aaa ggc   ccc tgc tct cac atg   tgt cta atc aat cac   aat agg          5622
Gly Lys Gly   Pro Cys Ser His Met   Cys Leu Ile Asn His   Asn Arg
        1575                1580                  1585

agt gct gcc   tgt gcg tgc ccc cac   ttg atg aag ctt tct   tca gac          5667
Ser Ala Ala   Cys Ala Cys Pro His   Leu Met Lys Leu Ser   Ser Asp
        1590                1595                  1600

aag aag acc   tgc tat gaa atg aaa   aaa ttt ctt ctt tat   gca aga          5712
Lys Lys Thr   Cys Tyr Glu Met Lys   Lys Phe Leu Leu Tyr   Ala Arg
        1605                1610                  1615
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cgt tct gaa  atc aga gga gtg gat  att gac aat cca tac  ttt aac   5757
Arg Ser Glu  Ile Arg Gly Val Asp  Ile Asp Asn Pro Tyr  Phe Asn
        1620             1625              1630

ttc atc acg  gca ttt aca gtc cct  gat att gat gac gtt  act gtg   5802
Phe Ile Thr  Ala Phe Thr Val Pro  Asp Ile Asp Asp Val  Thr Val
        1635             1640              1645

ata gac ttc  gat gca tct gag gaa  cgt tta tac tgg aca  gat att   5847
Ile Asp Phe  Asp Ala Ser Glu Glu  Arg Leu Tyr Trp Thr  Asp Ile
        1650             1655              1660

aaa aca caa  acc att aaa cga gct  ttt att aac gga act  ggg tta   5892
Lys Thr Gln  Thr Ile Lys Arg Ala  Phe Ile Asn Gly Thr  Gly Leu
        1665             1670              1675

gaa act gtt  att tca aga gat att  cag agt atc aga ggg  cta gca   5937
Glu Thr Val  Ile Ser Arg Asp Ile  Gln Ser Ile Arg Gly  Leu Ala
        1680             1685              1690

gtg gat tgg  gtg tca cgt aat tta  tac tgg att agc tca  gaa ttt   5982
Val Asp Trp  Val Ser Arg Asn Leu  Tyr Trp Ile Ser Ser  Glu Phe
        1695             1700              1705

gat gaa acg  caa att aat gtg gca  agg cta gat ggc tct  ttg aaa   6027
Asp Glu Thr  Gln Ile Asn Val Ala  Arg Leu Asp Gly Ser  Leu Lys
        1710             1715              1720

acc tca att  atc cat gga atc gat  aag cca cag tgt ctt  gca gct   6072
Thr Ser Ile  Ile His Gly Ile Asp  Lys Pro Gln Cys Leu  Ala Ala
        1725             1730              1735

cac cca gtc  agg gga aaa ctc tac  tgg acc gat gga aac  aca att   6117
His Pro Val  Arg Gly Lys Leu Tyr  Trp Thr Asp Gly Asn  Thr Ile
        1740             1745              1750

aac atg gca  aat atg gat ggc agt  aat agc aag att ctg  ttt cag   6162
Asn Met Ala  Asn Met Asp Gly Ser  Asn Ser Lys Ile Leu  Phe Gln
        1755             1760              1765

aat cag aag  gag cca gtt ggt cta  tcg ata gac tat gtg  gaa aac   6207
Asn Gln Lys  Glu Pro Val Gly Leu  Ser Ile Asp Tyr Val  Glu Asn
        1770             1775              1780

aag ctt tat  tgg atc agt tcg ggg  aat gga acc ata aat  aga tgc   6252
Lys Leu Tyr  Trp Ile Ser Ser Gly  Asn Gly Thr Ile Asn  Arg Cys
        1785             1790              1795

aac ctg gat  ggt ggt aat tta gaa  gta atc gag tca atg  aaa gaa   6297
Asn Leu Asp  Gly Gly Asn Leu Glu  Val Ile Glu Ser Met  Lys Glu
        1800             1805              1810

gaa tta aca  aaa gct aca gcc cta  acc atc atg gat aag  aaa ctg   6342
Glu Leu Thr  Lys Ala Thr Ala Leu  Thr Ile Met Asp Lys  Lys Leu
        1815             1820              1825

tgg tgg gca  gac caa aac tta gcc  cag cta gga acc tgc  agc aaa   6387
Trp Trp Ala  Asp Gln Asn Leu Ala  Gln Leu Gly Thr Cys  Ser Lys
        1830             1835              1840

aga gac gga  aga aac ccc acc atc  cta cgg aat aag act  tct ggg   6432
Arg Asp Gly  Arg Asn Pro Thr Ile  Leu Arg Asn Lys Thr  Ser Gly
        1845             1850              1855
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gta gtt cat  atg aaa gtc tat gat  aaa gaa gca cag caa  ggc agc      6477
Val Val His  Met Lys Val Tyr Asp  Lys Glu Ala Gln Gln  Gly Ser
        1860             1865              1870

aat tcc tgc  caa cta aac aat ggt  gga tgc tct caa ctt  tgt tta      6522
Asn Ser Cys  Gln Leu Asn Asn Gly  Gly Cys Ser Gln Leu  Cys Leu
        1875             1880              1885

cca aca tct  gaa act aca agg act  tgt atg tgt aca gtg  gga tat      6567
Pro Thr Ser  Glu Thr Thr Arg Thr  Cys Met Cys Thr Val  Gly Tyr
        1890             1895              1900

tat ctc caa  aag aac cgt atg tca  tgt caa ggt ata gaa  tca ttt      6612
Tyr Leu Gln  Lys Asn Arg Met Ser  Cys Gln Gly Ile Glu  Ser Phe
        1905             1910              1915

ctt atg tac  tct gtt cat gaa gga  atc agg gga ata cct  ctt gaa      6657
Leu Met Tyr  Ser Val His Glu Gly  Ile Arg Gly Ile Pro  Leu Glu
        1920             1925              1930

cca agt gac  aaa atg gat gct ttg  atg cct ata tca gga  act tca      6702
Pro Ser Asp  Lys Met Asp Ala Leu  Met Pro Ile Ser Gly  Thr Ser
        1935             1940              1945

ttt gcc gtg  gga ata gat ttc cat  gca gaa aat gat acc  atc tac      6747
Phe Ala Val  Gly Ile Asp Phe His  Ala Glu Asn Asp Thr  Ile Tyr
        1950             1955              1960

tgg aca gac  atg ggc ttc aat aaa  att agc aga gct aaa  aga gat      6792
Trp Thr Asp  Met Gly Phe Asn Lys  Ile Ser Arg Ala Lys  Arg Asp
        1965             1970              1975

cag act tgg  aaa gaa gat atc att  acc aat ggc ttg gga  aga gtg      6837
Gln Thr Trp  Lys Glu Asp Ile Ile  Thr Asn Gly Leu Gly  Arg Val
        1980             1985              1990

gaa ggg ata  gct gtt gac tgg att  gct ggt aac ata tat  tgg aca      6882
Glu Gly Ile  Ala Val Asp Trp Ile  Ala Gly Asn Ile Tyr  Trp Thr
        1995             2000              2005

gat cat ggt  ttc aac tta att gaa  gtt gca aga ctc aat  ggt tct      6927
Asp His Gly  Phe Asn Leu Ile Glu  Val Ala Arg Leu Asn  Gly Ser
        2010             2015              2020

ttc cgt tat  gta att att tcc caa  ggc ctg gat caa cca  aga tct      6972
Phe Arg Tyr  Val Ile Ile Ser Gln  Gly Leu Asp Gln Pro  Arg Ser
        2025             2030              2035

ata gct gtg  cac cca gag aaa ggc  ctc ttg ttc tgg act  gaa tgg      7017
Ile Ala Val  His Pro Glu Lys Gly  Leu Leu Phe Trp Thr  Glu Trp
        2040             2045              2050

gga caa atg  ccc tgt att gga aag  gct cgc ttg gat ggc  tca gag      7062
Gly Gln Met  Pro Cys Ile Gly Lys  Ala Arg Leu Asp Gly  Ser Glu
        2055             2060              2065

aag gtt gtc  ctt gta agc atg gga  ata gca tgg ccg aat  ggc atc      7107
Lys Val Val  Leu Val Ser Met Gly  Ile Ala Trp Pro Asn  Gly Ile
        2070             2075              2080

tcc atc gac  tat gag gaa aat aaa  ttg tac tgg tgt gat  gct cgc      7152
Ser Ile Asp  Tyr Glu Glu Asn Lys  Leu Tyr Trp Cys Asp  Ala Arg
        2085             2090              2095
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aca gac aag   ata gag aga atc gac   ctt gag act gga ggg   aat cgc      7197
Thr Asp Lys   Ile Glu Arg Ile Asp   Leu Glu Thr Gly Gly   Asn Arg
        2100                  2105                  2110

gag atg gtg   ctg tca gga agc aat   gtg gat atg ttt tca   gtt gca      7242
Glu Met Val   Leu Ser Gly Ser Asn   Val Asp Met Phe Ser   Val Ala
        2115                  2120                  2125

gtc ttt ggg   gct tac atc tac tgg   tct gac aga gca cat   gca aac      7287
Val Phe Gly   Ala Tyr Ile Tyr Trp   Ser Asp Arg Ala His   Ala Asn
        2130                  2135                  2140

ggg tct gtc   aga agg ggc cac aag   aat gat gcc aca gaa   acg ata      7332
Gly Ser Val   Arg Arg Gly His Lys   Asn Asp Ala Thr Glu   Thr Ile
        2145                  2150                  2155

acc atg aga   acc ggc ctt gga gtc   aac ctg aag gag gtt   aaa ata      7377
Thr Met Arg   Thr Gly Leu Gly Val   Asn Leu Lys Glu Val   Lys Ile
        2160                  2165                  2170

ttt aac cga   gta aga gag aaa ggg   acc aat gtt tgt gcc   agg gac      7422
Phe Asn Arg   Val Arg Glu Lys Gly   Thr Asn Val Cys Ala   Arg Asp
        2175                  2180                  2185

aat ggt ggc   tgt aag caa ctc tgt   ctt tat cga gga aat   tcc cgg      7467
Asn Gly Gly   Cys Lys Gln Leu Cys   Leu Tyr Arg Gly Asn   Ser Arg
        2190                  2195                  2200

aga act tgt   gct tgt gcc cat gga   tat ttg gca gaa gat   gga gtt      7512
Arg Thr Cys   Ala Cys Ala His Gly   Tyr Leu Ala Glu Asp   Gly Val
        2205                  2210                  2215

act tgc ctg   agg cat gaa ggc tat   tta ctg tat tca gga   aga aca      7557
Thr Cys Leu   Arg His Glu Gly Tyr   Leu Leu Tyr Ser Gly   Arg Thr
        2220                  2225                  2230

ata tta aaa   agt ata cat ctt tct   gat gaa acc aat tta   aat tcc      7602
Ile Leu Lys   Ser Ile His Leu Ser   Asp Glu Thr Asn Leu   Asn Ser
        2235                  2240                  2245

cca ata agg   cca tat gag aat cca   cgt tat ttc aag aat   gtc ata      7647
Pro Ile Arg   Pro Tyr Glu Asn Pro   Arg Tyr Phe Lys Asn   Val Ile
        2250                  2255                  2260

gcc ttg gct   ttt gac tat aat caa   aga aga aaa ggt acc   aac cga      7692
Ala Leu Ala   Phe Asp Tyr Asn Gln   Arg Arg Lys Gly Thr   Asn Arg
        2265                  2270                  2275

atc ttt tac   agt gat gca cac ttt   gga aat ata cag ctt   att aaa      7737
Ile Phe Tyr   Ser Asp Ala His Phe   Gly Asn Ile Gln Leu   Ile Lys
        2280                  2285                  2290

gac aac tgg   gaa gac aga caa gta   att gtt gaa aat gtg   ggt tct      7782
Asp Asn Trp   Glu Asp Arg Gln Val   Ile Val Glu Asn Val   Gly Ser
        2295                  2300                  2305

gtg gaa gga   ctt gcc tat cac aga   gcc tgg gat aca ctg   tac tgg      7827
Val Glu Gly   Leu Ala Tyr His Arg   Ala Trp Asp Thr Leu   Tyr Trp
        2310                  2315                  2320

aca agc tct   acc acc tca tcc atc   acc aga cac act gtg   gac cag      7872
Thr Ser Ser   Thr Thr Ser Ser Ile   Thr Arg His Thr Val   Asp Gln
        2325                  2330                  2335
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act cgg cct  gga gca ttt gac agg  gaa gct gtc atc acc  atg tca      7917
Thr Arg Pro  Gly Ala Phe Asp Arg  Glu Ala Val Ile Thr  Met Ser
        2340              2345                  2350

gaa gat gac  cat cca cat gtg cta  gcc ttg gat gaa tgt  caa aat      7962
Glu Asp Asp  His Pro His Val Leu  Ala Leu Asp Glu Cys  Gln Asn
        2355              2360                  2365

tta atg ttt  tgg acc aac tgg aat  gaa caa cat cca agt  atc atg      8007
Leu Met Phe  Trp Thr Asn Trp Asn  Glu Gln His Pro Ser  Ile Met
        2370              2375                  2380

aga tct act  ctg act ggg aaa aat  gct caa gtg gtg gtc  agt aca      8052
Arg Ser Thr  Leu Thr Gly Lys Asn  Ala Gln Val Val Val  Ser Thr
        2385              2390                  2395

gac ata ctc  act cca aat gga ctt  act atc gac tac cgt  gca gag      8097
Asp Ile Leu  Thr Pro Asn Gly Leu  Thr Ile Asp Tyr Arg  Ala Glu
        2400              2405                  2410

aag ctg tat  ttc tca gat ggc agt  cta gga aaa att gaa  agg tgt      8142
Lys Leu Tyr  Phe Ser Asp Gly Ser  Leu Gly Lys Ile Glu  Arg Cys
        2415              2420                  2425

gaa tac gat  gga tcc cag aga cat  gtg ata gtt aaa tct  ggg cca      8187
Glu Tyr Asp  Gly Ser Gln Arg His  Val Ile Val Lys Ser  Gly Pro
        2430              2435                  2440

ggg act ttc  ctc agt ttg gct gtt  tat gac aat tat ata  ttc tgg      8232
Gly Thr Phe  Leu Ser Leu Ala Val  Tyr Asp Asn Tyr Ile  Phe Trp
        2445              2450                  2455

tcg gac tgg  gga aga aga gct ata  ctg cgg tcc aac aag  tac aca      8277
Ser Asp Trp  Gly Arg Arg Ala Ile  Leu Arg Ser Asn Lys  Tyr Thr
        2460              2465                  2470

gga gga gat  aca aaa att ctt cgt  tcc gat att cca cat  cag cca      8322
Gly Gly Asp  Thr Lys Ile Leu Arg  Ser Asp Ile Pro His  Gln Pro
        2475              2480                  2485

atg gga atc  ata gct gtt gcc aat  gac acc aat agc tgt  gaa ctt      8367
Met Gly Ile  Ile Ala Val Ala Asn  Asp Thr Asn Ser Cys  Glu Leu
        2490              2495                  2500

tct cca tgt  gca tta ttg aat gga  ggc tgc cat gac ttg  tgc ctt      8412
Ser Pro Cys  Ala Leu Leu Asn Gly  Gly Cys His Asp Leu  Cys Leu
        2505              2510                  2515

tta act ccc  aat ggg aga gtg aat  tgt tcc tgc aga ggg  gac cga      8457
Leu Thr Pro  Asn Gly Arg Val Asn  Cys Ser Cys Arg Gly  Asp Arg
        2520              2525                  2530

ata ttg cta  gag gac aac aga tgt  gtg act aaa aat tcc  tcc tgc      8502
Ile Leu Leu  Glu Asp Asn Arg Cys  Val Thr Lys Asn Ser  Ser Cys
        2535              2540                  2545

aac gct tat  tcg gag ttt gaa tgt  gga aat ggt gag tgc  att gac      8547
Asn Ala Tyr  Ser Glu Phe Glu Cys  Gly Asn Gly Glu Cys  Ile Asp
        2550              2555                  2560

tac cag ctc  acc tgt gat ggc att  cct cac tgt aaa gat  aaa tca      8592
Tyr Gln Leu  Thr Cys Asp Gly Ile  Pro His Cys Lys Asp  Lys Ser
        2565              2570                  2575
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gat gaa aaa  ctg ctc tac tgt gaa  aac aga agc tgt cga  aga ggc      8637
Asp Glu Lys  Leu Leu Tyr Cys Glu  Asn Arg Ser Cys Arg  Arg Gly
        2580             2585               2590

ttc aag cca  tgc tat aat cgc cgc  tgc att cct cat ggc  aag tta      8682
Phe Lys Pro  Cys Tyr Asn Arg Arg  Cys Ile Pro His Gly  Lys Leu
        2595             2600               2605

tgt gat gga  gaa aat gac tgc gga  gac aac tct gat gaa  tta gat      8727
Cys Asp Gly  Glu Asn Asp Cys Gly  Asp Asn Ser Asp Glu  Leu Asp
        2610             2615               2620

tgt aaa gtt  tca acc tgt gcc acg  gtt gag ttc cgc tgt  gca gat      8772
Cys Lys Val  Ser Thr Cys Ala Thr  Val Glu Phe Arg Cys  Ala Asp
        2625             2630               2635

ggg act tgt  att cca aga tca gca  cga tgc aac cag aac  ata gat      8817
Gly Thr Cys  Ile Pro Arg Ser Ala  Arg Cys Asn Gln Asn  Ile Asp
        2640             2645               2650

tgt gca gat  gct tca gat gaa aag  aac tgc aat aac aca  gac tgc      8862
Cys Ala Asp  Ala Ser Asp Glu Lys  Asn Cys Asn Asn Thr  Asp Cys
        2655             2660               2665

aca cat ttc  tat aag ctt gga gtg  aaa acc aca ggg ttc  ata aga      8907
Thr His Phe  Tyr Lys Leu Gly Val  Lys Thr Thr Gly Phe  Ile Arg
        2670             2675               2680

tgt aat tct  acc tca ctg tgt gtt  ctg cca acc tgg ata  tgc gac      8952
Cys Asn Ser  Thr Ser Leu Cys Val  Leu Pro Thr Trp Ile  Cys Asp
        2685             2690               2695

ggg tct aat  gac tgt gga gac tat  tca gat gaa tta aag  tgc cca      8997
Gly Ser Asn  Asp Cys Gly Asp Tyr  Ser Asp Glu Leu Lys  Cys Pro
        2700             2705               2710

gtt cag aac  aaa cac aaa tgt gaa  gaa aat tat ttt agt  tgt cct      9042
Val Gln Asn  Lys His Lys Cys Glu  Glu Asn Tyr Phe Ser  Cys Pro
        2715             2720               2725

agt gga aga  tgc att ttg aat acc  tgg ata tgc gat ggt  cag aaa      9087
Ser Gly Arg  Cys Ile Leu Asn Thr  Trp Ile Cys Asp Gly  Gln Lys
        2730             2735               2740

gat tgt gag  gat gga cgt gat gaa  ttc cac tgt gat tct  tct tgc      9132
Asp Cys Glu  Asp Gly Arg Asp Glu  Phe His Cys Asp Ser  Ser Cys
        2745             2750               2755

tct tgg aac  caa ttt gct tgt tcc  gca caa aaa tgt att  tct aag      9177
Ser Trp Asn  Gln Phe Ala Cys Ser  Ala Gln Lys Cys Ile  Ser Lys
        2760             2765               2770

cat tgg att  tgt gat gga gaa gat  gac tgt ggg gat ggg  tta gat      9222
His Trp Ile  Cys Asp Gly Glu Asp  Asp Cys Gly Asp Gly  Leu Asp
        2775             2780               2785

gaa agt gac  agc att tgt ggt gcc  ata acc tgt gct gct  gac atg      9267
Glu Ser Asp  Ser Ile Cys Gly Ala  Ile Thr Cys Ala Ala  Asp Met
        2790             2795               2800

ttc agc tgc  cag ggc tct cgt gcc  tgc gtg ccc cga cat  tgg ctt      9312
Phe Ser Cys  Gln Gly Ser Arg Ala  Cys Val Pro Arg His  Trp Leu
        2805             2810               2815
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tgt gat ggt  gaa agg gac tgt cca  gat gga agc gat gag  ctt tcc      9357
Cys Asp Gly  Glu Arg Asp Cys Pro  Asp Gly Ser Asp Glu  Leu Ser
        2820             2825                2830

aca gca ggc  tgc gct ccc aat aat  aca tgt gat gaa aat  gct ttc      9402
Thr Ala Gly  Cys Ala Pro Asn Asn  Thr Cys Asp Glu Asn  Ala Phe
        2835             2840                2845

atg tgc cat  aat aaa gta tgc att  ccc aag caa ttt gtt  tgt gac      9447
Met Cys His  Asn Lys Val Cys Ile  Pro Lys Gln Phe Val  Cys Asp
        2850             2855                2860

cat gat gac  gac tgt gga gat ggc  tct gat gag tca ccg  cag tgt      9492
His Asp Asp  Asp Cys Gly Asp Gly  Ser Asp Glu Ser Pro  Gln Cys
        2865             2870                2875

gga tac cga  cag tgt ggt aca gaa  gaa ttt agt tgt gct  gat ggg      9537
Gly Tyr Arg  Gln Cys Gly Thr Glu  Glu Phe Ser Cys Ala  Asp Gly
        2880             2885                2890

cgg tgt ctt  cta aat act caa tgg  cag tgt gat gga gac  ttt gac      9582
Arg Cys Leu  Leu Asn Thr Gln Trp  Gln Cys Asp Gly Asp  Phe Asp
        2895             2900                2905

tgt cct gac  cat tct gat gaa gca  cct tta aac cca aag  tgt aaa      9627
Cys Pro Asp  His Ser Asp Glu Ala  Pro Leu Asn Pro Lys  Cys Lys
        2910             2915                2920

agt gca gaa  cag tca tgc aac agt  tca ttt ttt atg tgc  aaa aat      9672
Ser Ala Glu  Gln Ser Cys Asn Ser  Ser Phe Phe Met Cys  Lys Asn
        2925             2930                2935

ggc agg tgc  att ccc agt gga ggt  ctt tgt gac aat aag  gat gac      9717
Gly Arg Cys  Ile Pro Ser Gly Gly  Leu Cys Asp Asn Lys  Asp Asp
        2940             2945                2950

tgt ggc gat  ggt tca gat gag aga  aac tgc cat ata aat  gaa tgt      9762
Cys Gly Asp  Gly Ser Asp Glu Arg  Asn Cys His Ile Asn  Glu Cys
        2955             2960                2965

ttg agt aag  aaa gtc agt gga tgt  tct caa gat tgt caa  gac ctt      9807
Leu Ser Lys  Lys Val Ser Gly Cys  Ser Gln Asp Cys Gln  Asp Leu
        2970             2975                2980

ccg gtc agt  tat aag tgc aaa tgc  tgg cct gga ttc caa  ctg aag      9852
Pro Val Ser  Tyr Lys Cys Lys Cys  Trp Pro Gly Phe Gln  Leu Lys
        2985             2990                2995

gat gac ggc  aaa aca tgt gta gac  att gat gaa tgc tct  tca ggc      9897
Asp Asp Gly  Lys Thr Cys Val Asp  Ile Asp Glu Cys Ser  Ser Gly
        3000             3005                3010

ttt ccc tgt  agc cag caa tgc atc  aat aca tac ggg act  tac aag      9942
Phe Pro Cys  Ser Gln Gln Cys Ile  Asn Thr Tyr Gly Thr  Tyr Lys
        3015             3020                3025

tgc ctc tgt  aca gat ggg tat gaa  ata caa cct gat aac  cca aat      9987
Cys Leu Cys  Thr Asp Gly Tyr Glu  Ile Gln Pro Asp Asn  Pro Asn
        3030             3035                3040

ggc tgc aaa  tcg ctc tca gat gaa  gaa cct ttt tta att  ctt gct     10032
Gly Cys Lys  Ser Leu Ser Asp Glu  Glu Pro Phe Leu Ile  Leu Ala
        3045             3050                3055
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gat cat cat   gag ata agg aaa att   agc act gat ggc tcc   aac tac       10077
Asp His His   Glu Ile Arg Lys Ile   Ser Thr Asp Gly Ser   Asn Tyr
        3060                  3065                3070

aca ctt tta   aaa cag gga tta aac   aat gtt att gct ata   gac ttt       10122
Thr Leu Leu   Lys Gln Gly Leu Asn   Asn Val Ile Ala Ile   Asp Phe
        3075                  3080                3085

gat tac aga   gaa gaa ttc atc tat   tgg atc gat tct agc   cga ccc       10167
Asp Tyr Arg   Glu Glu Phe Ile Tyr   Trp Ile Asp Ser Ser   Arg Pro
        3090                  3095                3100

aat ggc agt   cgc ata aat aga atg   tgt tta aat gga agt   gac att       10212
Asn Gly Ser   Arg Ile Asn Arg Met   Cys Leu Asn Gly Ser   Asp Ile
        3105                  3110                3115

aag gta gtt   cat aac aca gcg gtc   ccc aat gca ctt gct   gtc gat       10257
Lys Val Val   His Asn Thr Ala Val   Pro Asn Ala Leu Ala   Val Asp
        3120                  3125                3130

tgg att gga   aaa aac ctc tat tgg   tct gac aca gaa aaa   aga atc       10302
Trp Ile Gly   Lys Asn Leu Tyr Trp   Ser Asp Thr Glu Lys   Arg Ile
        3135                  3140                3145

att gaa gta   tcc aaa ctc aat ggc   ttg tac cct act ata   ctc gtt       10347
Ile Glu Val   Ser Lys Leu Asn Gly   Leu Tyr Pro Thr Ile   Leu Val
        3150                  3155                3160

agc aaa agg   ctg aag ttt ccc aga   gac ttg tct tta gat   cct caa       10392
Ser Lys Arg   Leu Lys Phe Pro Arg   Asp Leu Ser Leu Asp   Pro Gln
        3165                  3170                3175

gct gga tat   ttg tat tgg att gac   tgc tgc gag tat cct   cat att       10437
Ala Gly Tyr   Leu Tyr Trp Ile Asp   Cys Cys Glu Tyr Pro   His Ile
        3180                  3185                3190

ggc cgt gtt   gga atg gat gga acc   aat cag agt gtt gtc   ata gaa       10482
Gly Arg Val   Gly Met Asp Gly Thr   Asn Gln Ser Val Val   Ile Glu
        3195                  3200                3205

acc aag att   tct aga cct atg gca   cta aca ata gat tat   gtt aat       10527
Thr Lys Ile   Ser Arg Pro Met Ala   Leu Thr Ile Asp Tyr   Val Asn
        3210                  3215                3220

cgt aga ctc   tac tgg gcc gat gaa   aat cac att gaa ttt   agc aac       10572
Arg Arg Leu   Tyr Trp Ala Asp Glu   Asn His Ile Glu Phe   Ser Asn
        3225                  3230                3235

atg gat gga   tct cat aga cac aaa   gtc cct aat caa gat   att cca       10617
Met Asp Gly   Ser His Arg His Lys   Val Pro Asn Gln Asp   Ile Pro
        3240                  3245                3250

ggg gtg att   gca cta aca ttg ttt   gaa gac tac atc tac   tgg act       10662
Gly Val Ile   Ala Leu Thr Leu Phe   Glu Asp Tyr Ile Tyr   Trp Thr
        3255                  3260                3265

gat ggg aaa   acc aag tca ctc agc   cgt gcc cat aaa aca   tcg gga       10707
Asp Gly Lys   Thr Lys Ser Leu Ser   Arg Ala His Lys Thr   Ser Gly
        3270                  3275                3280

gca gac aga   ctc tca ctg att tac   tca tgg cat gcc atc   aca gat       10752
Ala Asp Arg   Leu Ser Leu Ile Tyr   Ser Trp His Ala Ile   Thr Asp
        3285                  3290                3295
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atc cag gtg  tat cat tct tat aga  caa cct gat gtc tcc  aaa cat      10797
Ile Gln Val  Tyr His Ser Tyr Arg  Gln Pro Asp Val Ser  Lys His
    3300                  3305                  3310

ctc tgc atg  ata aat aat ggt ggt  tgc agt cat ttg tgc  ctt tta      10842
Leu Cys Met  Ile Asn Asn Gly Gly  Cys Ser His Leu Cys  Leu Leu
    3315                  3320                  3325

gcc cct gga  aaa acc cac act tgt  gca tgt ccc act aac  ttc tat      10887
Ala Pro Gly  Lys Thr His Thr Cys  Ala Cys Pro Thr Asn  Phe Tyr
    3330                  3335                  3340

ctg gca gct  gat aat agg act tgc  tta tcc aac tgc aca  gcc agc      10932
Leu Ala Ala  Asp Asn Arg Thr Cys  Leu Ser Asn Cys Thr  Ala Ser
    3345                  3350                  3355

cag ttt cgt  tgc aaa act gac aaa  tgt att cca ttc tgg  tgg aaa      10977
Gln Phe Arg  Cys Lys Thr Asp Lys  Cys Ile Pro Phe Trp  Trp Lys
    3360                  3365                  3370

tgt gac acc  gtg gat gac tgt ggt  gat gga tct gat gaa  cct gat      11022
Cys Asp Thr  Val Asp Asp Cys Gly  Asp Gly Ser Asp Glu  Pro Asp
    3375                  3380                  3385

gac tgt cct  gaa ttt aga tgt cag  cca ggc cga ttt cag  tgt ggg      11067
Asp Cys Pro  Glu Phe Arg Cys Gln  Pro Gly Arg Phe Gln  Cys Gly
    3390                  3395                  3400

act gga ctc  tgt gct cta cca gct  ttc atc tgt gat gga  gag aat      11112
Thr Gly Leu  Cys Ala Leu Pro Ala  Phe Ile Cys Asp Gly  Glu Asn
    3405                  3410                  3415

gat tgt gga  gac aat tct gat gaa  ctc aac tgt gac aca  cat gtc      11157
Asp Cys Gly  Asp Asn Ser Asp Glu  Leu Asn Cys Asp Thr  His Val
    3420                  3425                  3430

tgc ctg tca  ggt caa ttc aaa tgt  acc aag aac cag aaa  tgt atc      11202
Cys Leu Ser  Gly Gln Phe Lys Cys  Thr Lys Asn Gln Lys  Cys Ile
    3435                  3440                  3445

cca gta aac  tta aga tgt aat ggg  caa gat gac tgt ggt  gat gag      11247
Pro Val Asn  Leu Arg Cys Asn Gly  Gln Asp Asp Cys Gly  Asp Glu
    3450                  3455                  3460

gaa gat gaa  aga gac tgt cct gaa  aac agc tgt tct cca  gac tat      11292
Glu Asp Glu  Arg Asp Cys Pro Glu  Asn Ser Cys Ser Pro  Asp Tyr
    3465                  3470                  3475

ttc cag tgt  aag act acg aag cat  tgc att tcc aag ctg  tgg gtt      11337
Phe Gln Cys  Lys Thr Thr Lys His  Cys Ile Ser Lys Leu  Trp Val
    3480                  3485                  3490

tgt gac gag  gat cca gac tgt gca  gat gca tca gac gag  gcc aac      11382
Cys Asp Glu  Asp Pro Asp Cys Ala  Asp Ala Ser Asp Glu  Ala Asn
    3495                  3500                  3505

tgc gat aaa  aag act tgt gga cct  cat gaa ttc cag tgt  aaa aac      11427
Cys Asp Lys  Lys Thr Cys Gly Pro  His Glu Phe Gln Cys  Lys Asn
    3510                  3515                  3520

aac aac tgt  att ccc gat cac tgg  cgg tgt gat agc caa  aat gac      11472
Asn Asn Cys  Ile Pro Asp His Trp  Arg Cys Asp Ser Gln  Asn Asp
    3525                  3530                  3535
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tgc agt gat  aat tca gat gaa gaa  aac tgt aag cca cag  aca tgt        11517
Cys Ser Asp  Asn Ser Asp Glu Glu  Asn Cys Lys Pro Gln  Thr Cys
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aca ttg aaa  gat ttc ctc tgt gcc  aat ggg gac tgt gtt  tct tca        11562
Thr Leu Lys  Asp Phe Leu Cys Ala  Asn Gly Asp Cys Val  Ser Ser
        3555              3560              3565

agg ttt tgg  tgt gat gga gat ttt  gac tgt gca gat ggc  tct gat        11607
Arg Phe Trp  Cys Asp Gly Asp Phe  Asp Cys Ala Asp Gly  Ser Asp
        3570              3575              3580

gag aga aat  tgt gag aca agt tgt  tcc aaa gat cag ttc  cgg tgt        11652
Glu Arg Asn  Cys Glu Thr Ser Cys  Ser Lys Asp Gln Phe  Arg Cys
        3585              3590              3595

tcc aat ggt  cag tgt ata cca gca  aaa tgg aaa tgt gat  ggc cat        11697
Ser Asn Gly  Gln Cys Ile Pro Ala  Lys Trp Lys Cys Asp  Gly His
        3600              3605              3610

gaa gac tgc  aaa tat ggg gaa gat  gag aaa agc tgt gag  cca gct        11742
Glu Asp Cys  Lys Tyr Gly Glu Asp  Glu Lys Ser Cys Glu  Pro Ala
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Ser Pro Thr  Cys Ser Ser Arg Glu  Tyr Ile Cys Ala Ser  Asp Gly
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tgt att tca  gca tct ttg aaa tgt  aat gga gaa tat gat  tgt gct        11832
Cys Ile Ser  Ala Ser Leu Lys Cys  Asn Gly Glu Tyr Asp  Cys Ala
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gat ggt tca  gat gag atg gac tgt  gtg act gaa tgt aag  gaa gat        11877
Asp Gly Ser  Asp Glu Met Asp Cys  Val Thr Glu Cys Lys  Glu Asp
        3660              3665              3670

cag ttt cgg  tgc aaa aat aaa gcc  cac tgt att cca att  aga tgg        11922
Gln Phe Arg  Cys Lys Asn Lys Ala  His Cys Ile Pro Ile  Arg Trp
        3675              3680              3685

ctg tgt gat  gga att cat gac tgt  gtg gat ggc agt gat  gaa gag        11967
Leu Cys Asp  Gly Ile His Asp Cys  Val Asp Gly Ser Asp  Glu Glu
        3690              3695              3700

aac tgt gaa  aga gga gga aat ata  tgt aga gct gat gag  ttc ctt        12012
Asn Cys Glu  Arg Gly Gly Asn Ile  Cys Arg Ala Asp Glu  Phe Leu
        3705              3710              3715

tgc aat aat  tct ctc tgc aaa cta  cat ttc tgg gtg tgt  gat gga        12057
Cys Asn Asn  Ser Leu Cys Lys Leu  His Phe Trp Val Cys  Asp Gly
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gag gac gac  tgt gga gac aac tct  gat gaa gcc cct gat  atg tgt        12102
Glu Asp Asp  Cys Gly Asp Asn Ser  Asp Glu Ala Pro Asp  Met Cys
        3735              3740              3745

gtc aaa ttt  ctt tgt cca tcc acg  aga cct cac aga tgc  aga aat        12147
Val Lys Phe  Leu Cys Pro Ser Thr  Arg Pro His Arg Cys  Arg Asn
        3750              3755              3760

aac aga ata  tgc cta cag tcg gag  caa atg tgc aat ggg  att gat        12192
Asn Arg Ile  Cys Leu Gln Ser Glu  Gln Met Cys Asn Gly  Ile Asp
        3765              3770              3775
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gaa tgc ggt  gac aat tca gat gaa  gat cac tgt ggt ggt  aag ctg      12237
Glu Cys Gly  Asp Asn Ser Asp Glu  Asp His Cys Gly Gly  Lys Leu
        3780                 3785                   3790

aca tat aaa  gca agg cct tgt aaa  aag gat gag ttt gct  tgt agt      12282
Thr Tyr Lys  Ala Arg Pro Cys Lys  Lys Asp Glu Phe Ala  Cys Ser
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aat aaa aaa  tgc atc cct atg gat  ctc cag tgt gat cga  ctt gat      12327
Asn Lys Lys  Cys Ile Pro Met Asp  Leu Gln Cys Asp Arg  Leu Asp
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gac tgc gga  gat ggt tca gat gag  caa gga tgc aga ata  gct cct      12372
Asp Cys Gly  Asp Gly Ser Asp Glu  Gln Gly Cys Arg Ile  Ala Pro
        3825                 3830                   3835

act gaa tat  acc tgt gaa gat aat  gtg aat cca tgt gga  gat gat      12417
Thr Glu Tyr  Thr Cys Glu Asp Asn  Val Asn Pro Cys Gly  Asp Asp
        3840                 3845                   3850

gca tat tgt  aat caa ata aaa aca  tct gtt ttc tgt cgc  tgt aag      12462
Ala Tyr Cys  Asn Gln Ile Lys Thr  Ser Val Phe Cys Arg  Cys Lys
        3855                 3860                   3865

cct gga ttt  cag aga aac atg aaa  aac aga caa tgt gaa  gac ctt      12507
Pro Gly Phe  Gln Arg Asn Met Lys  Asn Arg Gln Cys Glu  Asp Leu
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Asn Glu Cys  Leu Val Phe Gly Thr  Cys Ser His Gln Cys  Ile Asn
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gtg gaa gga  tca tat aaa tgt gtg  tgt gac cag aat ttt  caa gaa      12597
Val Glu Gly  Ser Tyr Lys Cys Val  Cys Asp Gln Asn Phe  Gln Glu
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aga aat aac  acc tgc ata gca gaa  ggc tct gaa gat caa  gtt ctc      12642
Arg Asn Asn  Thr Cys Ile Ala Glu  Gly Ser Glu Asp Gln  Val Leu
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tac att gct  aat gac act gat atc  ctg ggt ttt ata tat  cca ttc      12687
Tyr Ile Ala  Asn Asp Thr Asp Ile  Leu Gly Phe Ile Tyr  Pro Phe
        3930                 3935                   3940

aac tac agt  ggc gat cat caa caa  att tct cat att gaa  cat aat      12732
Asn Tyr Ser  Gly Asp His Gln Gln  Ile Ser His Ile Glu  His Asn
        3945                 3950                   3955

tca aga ata  aca ggg atg gat gta  tat tat caa aga gat  atg att      12777
Ser Arg Ile  Thr Gly Met Asp Val  Tyr Tyr Gln Arg Asp  Met Ile
        3960                 3965                   3970

att tgg agt  act cag ttt aat cca  ggc gga att ttc tac  aaa agg      12822
Ile Trp Ser  Thr Gln Phe Asn Pro  Gly Gly Ile Phe Tyr  Lys Arg
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atc cat ggc  aga gaa aaa agg caa  gca aac agt ggc ttg  att tgt      12867
Ile His Gly  Arg Glu Lys Arg Gln  Ala Asn Ser Gly Leu  Ile Cys
        3990                 3995                   4000

cct gaa ttt  aaa agg ccc agg gac  att gca gtt gac tgg  gtg gct      12912
Pro Glu Phe  Lys Arg Pro Arg Asp  Ile Ala Val Asp Trp  Val Ala
        4005                 4010                   4015
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gga aac att  tac tgg act gat cat  tct aga atg cat tgg  ttc agt      12957
Gly Asn Ile  Tyr Trp Thr Asp His  Ser Arg Met His Trp  Phe Ser
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Tyr Tyr Thr  Thr His Trp Thr Ser  Leu Arg Tyr Ser Ile  Asn Val
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Gly Gln Leu  Asn Gly Pro Asn Cys  Thr Arg Leu Leu Thr  Asn Met
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Ala Gly Glu  Pro Tyr Ala Ile Ala  Val Asn Pro Lys Arg  Gly Met
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atg tac tgg  act gtt gtt ggg gat  cat tcc cat ata gaa  gaa gca      13137
Met Tyr Trp  Thr Val Val Gly Asp  His Ser His Ile Glu  Glu Ala
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Ala Met Asp  Gly Thr Leu Arg Arg  Ile Leu Val Gln Lys  Asn Leu
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Gln Arg Pro  Thr Gly Leu Ala Val  Asp Tyr Phe Ser Glu  Arg Ile
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tat tgg gct  gac ttt gag ctc tcc  atc att ggc agt gtt  ctg tat      13272
Tyr Trp Ala  Asp Phe Glu Leu Ser  Ile Ile Gly Ser Val  Leu Tyr
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gat ggc tct  aat tca gta gtc tct  gtc agc agc aaa caa  ggt tta      13317
Asp Gly Ser  Asn Ser Val Val Ser  Val Ser Ser Lys Gln  Gly Leu
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tta cat cca  cat agg atc gat atc  ttt gaa gat tat ata  tat gga      13362
Leu His Pro  His Arg Ile Asp Ile  Phe Glu Asp Tyr Ile  Tyr Gly
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gca gga cct  aaa aat ggt gta ttt  cga gtt caa aaa ttt  ggc cat      13407
Ala Gly Pro  Lys Asn Gly Val Phe  Arg Val Gln Lys Phe  Gly His
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ggt tca gta  gag tac tta gct tta  aat att gat aaa aca  aaa ggt      13452
Gly Ser Val  Glu Tyr Leu Ala Leu  Asn Ile Asp Lys Thr  Lys Gly
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Val Leu Ile  Ser His Arg Tyr Lys  Gln Leu Asp Leu Pro  Asn Pro
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tgc ttg gat  tta gca tgc gaa ttt  ctt tgc ttg cta aat  cct tct      13542
Cys Leu Asp  Leu Ala Cys Glu Phe  Leu Cys Leu Leu Asn  Pro Ser
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ggg gcc act  tgt gtg tgt cca gaa  gga aaa tat ttg att  aat ggc      13587
Gly Ala Thr  Cys Val Cys Pro Glu  Gly Lys Tyr Leu Ile  Asn Gly
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acc tgc aat  gat gac agc ctg tta  gat gat tca tgt aag  tta act      13632
Thr Cys Asn  Asp Asp Ser Leu Leu  Asp Asp Ser Cys Lys  Leu Thr
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tgt gaa aat   gga gga aga tgc att   tta aat gag aaa ggt   gat ttg      13677
Cys Glu Asn   Gly Gly Arg Cys Ile   Leu Asn Glu Lys Gly   Asp Leu
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agg tgt cac   tgt tgg ccc agt tat   tca gga gaa aga tgt   gaa gtc      13722
Arg Cys His   Cys Trp Pro Ser Tyr   Ser Gly Glu Arg Cys   Glu Val
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aac cac tgt   agc aac tac tgc cag   aat gga gga act tgc   gta cca      13767
Asn His Cys   Ser Asn Tyr Cys Gln   Asn Gly Gly Thr Cys   Val Pro
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Ser Val Leu   Gly Arg Pro Thr Cys   Ser Cys Ala Leu Gly   Phe Thr
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Gly Pro Asn   Cys Gly Lys Thr Val   Cys Glu Asp Phe Cys   Gln Asn
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gga gga acc   tgc att gtg act gct   gga aac cag cct tac   tgc cac      13902
Gly Gly Thr   Cys Ile Val Thr Ala   Gly Asn Gln Pro Tyr   Cys His
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Cys Gln Pro   Glu Tyr Thr Gly Asp   Arg Cys Gln Tyr Tyr   Val Cys
        4350                  4355                  4360

cac cac tat   tgt gtg aat tct gaa   tca tgt acc att ggg   gat gat      13992
His His Tyr   Cys Val Asn Ser Glu   Ser Cys Thr Ile Gly   Asp Asp
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gga agt ctt   gaa tgt gtc tgt cca   acg cgc tat gaa gga   cca aaa      14037
Gly Ser Leu   Glu Cys Val Cys Pro   Thr Arg Tyr Glu Gly   Pro Lys
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tgt gag gtt   gac aag tgt gta agg   tgc cat ggg ggg cac   tgc att      14082
Cys Glu Val   Asp Lys Cys Val Arg   Cys His Gly Gly His   Cys Ile
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ata aat aaa   gac agt gaa gat ata   ttt tgc aac tgc act   aat gga      14127
Ile Asn Lys   Asp Ser Glu Asp Ile   Phe Cys Asn Cys Thr   Asn Gly
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aag att gcc   tct agc tgt cag tta   tgt gat ggc tac tgt   tac aat      14172
Lys Ile Ala   Ser Ser Cys Gln Leu   Cys Asp Gly Tyr Cys   Tyr Asn
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ggt ggc aca   tgc cag ctg gac ccc   gag aca aat gta cct   gtg tgt      14217
Gly Gly Thr   Cys Gln Leu Asp Pro   Glu Thr Asn Val Pro   Val Cys
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Leu Cys Ser   Thr Asn Trp Ser Gly   Thr Gln Cys Glu Arg   Pro Ala
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cca aag agc   agc aag tct gat cat   atc agc aca aga agc   att gcc      14307
Pro Lys Ser   Ser Lys Ser Asp His   Ile Ser Thr Arg Ser   Ile Ala
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Ile Ile Val   Pro Leu Val Leu Leu   Val Thr Leu Ile Thr   Thr Leu
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Gly Asn Pro  Ser Tyr Asn Met Tyr  Glu Val Asp His Asp  His Asn
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Asp Gly Gly  Leu Leu Asp Pro Gly  Phe Met Ile Asp Pro  Thr Lys
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gcc agg tac  ata ggg gga gga ccc  agt gct ttc aag ctt  cca cac     14577
Ala Arg Tyr  Ile Gly Gly Gly Pro  Ser Ala Phe Lys Leu  Pro His
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Thr Ala Pro  Pro Ile Tyr Leu Asn  Ser Asp Leu Lys Gly  Pro Leu
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Tyr Met Asp  Gly Gln Asn Cys Arg  Asn Ser Leu Gly Ser  Val Asp
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Glu Thr Val  Ala
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<213>   Homo sapiens

<400>   33

Met Thr Pro Leu Gly Ser Arg Leu Gln Ala Ala Pro Ala Ala Ala Ala
1               5                   10                  15


Ala Ala Gly Pro Lys Val Pro Pro Ser Ser Leu Gln Arg Arg Leu Pro
                20                  25                  30


Tyr Arg Ala Thr Thr Met Ser Glu Phe Leu Leu Ala Leu Leu Thr Leu
            35                  40                  45


Ser Gly Leu Leu Pro Ile Ala Arg Val Leu Thr Val Gly Ala Asp Arg
        50                  55                  60


Asp Gln Gln Leu Cys Asp Pro Gly Glu Phe Leu Cys His Asp His Val
65                  70                  75                  80


Thr Cys Val Ser Arg Ser Trp Leu Cys Asp Gly Asp Pro Asp Cys Pro
```

```
                85                        90                        95

Asp Asp Ser Asp Glu Ser Leu Asp Thr Cys Pro Glu Glu Val Glu Ile
            100                 105                 110

Lys Cys Pro Leu Asn His Ile Ala Cys Leu Gly Thr Asn Lys Cys Val
            115                 120                 125

His Leu Ser Gln Leu Cys Asn Gly Val Leu Asp Cys Pro Asp Gly Tyr
            130                 135                 140

Asp Glu Gly Val His Cys Gln Glu Leu Leu Ser Asn Cys Gln Gln Leu
145                 150                 155                 160

Asn Cys Gln Tyr Lys Cys Thr Met Val Arg Asn Ser Thr Arg Cys Tyr
                165                 170                 175

Cys Glu Asp Gly Phe Glu Ile Thr Glu Asp Gly Arg Ser Cys Lys Asp
            180                 185                 190

Gln Asp Glu Cys Ala Val Tyr Gly Thr Cys Ser Gln Thr Cys Arg Asn
            195                 200                 205

Thr His Gly Ser Tyr Thr Cys Ser Cys Val Glu Gly Tyr Leu Met Gln
    210                 215                 220

Pro Asp Asn Arg Ser Cys Lys Ala Lys Ile Glu Pro Thr Asp Arg Pro
225                 230                 235                 240

Pro Ile Leu Leu Ile Ala Asn Phe Glu Thr Ile Glu Val Phe Tyr Leu
                245                 250                 255

Asn Gly Ser Lys Met Ala Thr Leu Ser Ser Val Asn Gly Asn Glu Ile
                260                 265                 270

His Thr Leu Asp Phe Ile Tyr Asn Glu Asp Val Ile Cys Trp Ile Glu
            275                 280                 285

Ser Arg Glu Ser Ser Asn Gln Leu Lys Cys Ile Gln Ile Thr Lys Ala
    290                 295                 300

Gly Gly Leu Thr Asp Glu Trp Thr Ile Asn Ile Leu Gln Ser Phe His
305                 310                 315                 320

Asn Val Gln Gln Met Ala Ile Asp Trp Leu Thr Arg Asn Leu Tyr Phe
                325                 330                 335
```

```
Val Asp His Val Gly Asp Arg Ile Phe Val Cys Asn Ser Asn Gly Ser
        340             345             350

Val Cys Val Thr Leu Ile Asp Leu Glu Leu His Asn Pro Lys Ala Ile
        355             360             365

Ala Val Asp Pro Ile Ala Gly Lys Leu Phe Phe Thr Asp Tyr Gly Asn
        370             375             380

Val Ala Lys Val Glu Arg Cys Asp Met Asp Gly Met Asn Arg Thr Arg
385             390             395             400

Ile Ile Asp Ser Lys Thr Glu Gln Pro Ala Ala Leu Ala Leu Asp Leu
            405             410             415

Val Asn Lys Leu Val Tyr Trp Val Asp Leu Tyr Leu Asp Tyr Val Gly
        420             425             430

Val Val Asp Tyr Gln Gly Lys Asn Arg His Thr Val Ile Gln Gly Arg
        435             440             445

Gln Val Arg His Leu Tyr Gly Ile Thr Val Phe Glu Asp Tyr Leu Tyr
        450             455             460

Ala Thr Asn Ser Asp Asn Tyr Asn Ile Val Arg Ile Asn Arg Phe Asn
465             470             475             480

Gly Thr Asp Ile His Ser Leu Ile Lys Ile Glu Asn Ala Trp Gly Ile
            485             490             495

Arg Ile Tyr Gln Lys Arg Thr Gln Pro Thr Val Arg Ser His Ala Cys
        500             505             510

Glu Val Asp Pro Tyr Gly Met Pro Gly Gly Cys Ser His Ile Cys Leu
        515             520             525

Leu Ser Ser Ser Tyr Lys Thr Arg Thr Cys Arg Cys Arg Thr Gly Phe
        530             535             540

Asn Leu Gly Ser Asp Gly Arg Ser Cys Lys Arg Pro Lys Asn Glu Leu
545             550             555             560

Phe Leu Phe Tyr Gly Lys Gly Arg Pro Gly Ile Val Arg Gly Met Asp
            565             570             575

Leu Asn Thr Lys Ile Ala Asp Glu Tyr Met Ile Pro Ile Glu Asn Leu
            580             585             590
```

Val Asn Pro Arg Ala Leu Asp Phe His Ala Glu Thr Asn Tyr Ile Tyr
    595   600   605

Phe Ala Asp Thr Thr Ser Phe Leu Ile Gly Arg Gln Lys Ile Asp Gly
    610   615   620

Thr Glu Arg Glu Thr Ile Leu Lys Asp Asp Leu Asp Asn Val Glu Gly
625   630   635   640

Ile Ala Val Asp Trp Ile Gly Asn Asn Leu Tyr Trp Thr Asn Asp Gly
          645   650   655

His Arg Lys Thr Ile Asn Val Ala Arg Leu Glu Lys Ala Ser Gln Ser
        660   665   670

Arg Lys Thr Leu Leu Glu Gly Glu Met Ser His Pro Arg Gly Ile Val
        675   680   685

Val Asp Pro Ile Asn Gly Trp Met Tyr Trp Thr Asp Trp Glu Glu Asp
    690   695   700

Glu Ile Asp Asp Ser Val Gly Arg Ile Glu Lys Ala Trp Met Asp Gly
705   710   715   720

Phe Asn Arg Gln Ile Phe Val Thr Ser Lys Met Leu Trp Pro Asn Gly
        725   730   735

Leu Thr Leu Asp Phe His Thr Asn Thr Leu Tyr Trp Cys Asp Ala Tyr
        740   745   750

Tyr Asp His Ile Glu Lys Val Phe Leu Asn Gly Thr His Arg Lys Ile
        755   760   765

Val Tyr Ser Gly Arg Glu Leu Asn His Pro Phe Gly Leu Ser His His
    770   775   780

Gly Asn Tyr Val Phe Trp Thr Asp Tyr Met Asn Gly Ser Ile Phe Gln
785   790   795   800

Leu Asp Leu Ile Thr Ser Glu Val Thr Leu Leu Arg His Glu Arg Pro
        805   810   815

Pro Leu Phe Gly Leu Gln Ile Tyr Asp Pro Arg Lys Gln Gln Gly Asp
        820   825   830

Asn Met Cys Arg Val Asn Asn Gly Gly Cys Ser Thr Leu Cys Leu Ala
        835   840   845

```
Ile Pro Gly Gly Arg Val Cys Ala Cys Ala Asp Asn Gln Leu Leu Asp
    850                 855             860


Glu Asn Gly Thr Thr Cys Thr Phe Asn Pro Gly Glu Ala Leu Pro His
865                 870             875                 880


Ile Cys Lys Ala Gly Glu Phe Arg Cys Lys Asn Arg His Cys Ile Gln
            885                 890                 895


Ala Arg Trp Lys Cys Asp Gly Asp Asp Cys Leu Asp Gly Ser Asp
            900                 905             910


Glu Asp Ser Val Asn Cys Phe Asn His Ser Cys Pro Asp Asp Gln Phe
        915             920             925


Lys Cys Gln Asn Asn Arg Cys Ile Pro Lys Arg Trp Leu Cys Asp Gly
    930             935             940


Ala Asn Asp Cys Gly Ser Asn Glu Asp Glu Ser Asn Gln Thr Cys Thr
945             950             955                 960


Ala Arg Thr Cys Gln Val Asp Gln Phe Ser Cys Gly Asn Gly Arg Cys
            965             970                 975


Ile Pro Arg Ala Trp Leu Cys Asp Arg Glu Asp Asp Cys Gly Asp Gln
            980             985             990


Thr Asp Glu Met Ala Ser Cys Glu  Phe Pro Thr Cys Glu  Pro Leu Thr
        995             1000            1005


Gln Phe  Val Cys Lys Ser Gly  Arg Cys Ile Ser Ser  Lys Trp His
    1010            1015            1020


Cys Asp  Ser Asp Asp Asp Cys  Gly Asp Gly Ser Asp  Glu Val Gly
    1025            1030            1035


Cys Val  His Ser Cys Phe Asp  Asn Gln Phe Arg Cys  Ser Ser Gly
    1040            1045            1050


Arg Cys  Ile Pro Gly His Trp  Ala Cys Asp Gly Asp  Asn Asp Cys
    1055            1060            1065


Gly Asp  Phe Ser Asp Glu Ala  Gln Ile Asn Cys Thr  Lys Glu Glu
    1070            1075            1080


Ile His  Ser Pro Ala Gly Cys  Asn Gly Asn Glu Phe  Gln Cys His
    1085            1090            1095
```

Pro Asp Gly Asn Cys Val Pro Asp Leu Trp Arg Cys Asp Gly Glu
    1100   1105   1110

Lys Asp Cys Glu Asp Gly Ser Asp Glu Lys Gly Cys Asn Gly Thr
    1115   1120   1125

Ile Arg Leu Cys Asp His Lys Thr Lys Phe Ser Cys Trp Ser Thr
    1130   1135   1140

Gly Arg Cys Ile Asn Lys Ala Trp Val Cys Asp Gly Asp Ile Asp
    1145   1150   1155

Cys Glu Asp Gln Ser Asp Glu Asp Asp Cys Asp Ser Phe Leu Cys
    1160   1165   1170

Gly Pro Pro Lys His Pro Cys Ala Asn Asp Thr Ser Val Cys Leu
    1175   1180   1185

Gln Pro Glu Lys Leu Cys Asn Gly Lys Lys Asp Cys Pro Asp Gly
    1190   1195   1200

Ser Asp Glu Gly Tyr Leu Cys Asp Glu Cys Ser Leu Asn Asn Gly
    1205   1210   1215

Gly Cys Ser Asn His Cys Ser Val Val Pro Gly Arg Gly Ile Val
    1220   1225   1230

Cys Ser Cys Pro Glu Gly Leu Gln Leu Asn Lys Asp Asn Lys Thr
    1235   1240   1245

Cys Glu Ile Val Asp Tyr Cys Ser Asn His Leu Lys Cys Ser Gln
    1250   1255   1260

Val Cys Glu Gln His Lys His Thr Val Lys Cys Ser Cys Tyr Glu
    1265   1270   1275

Gly Trp Lys Leu Asp Val Asp Gly Glu Ser Cys Thr Ser Val Asp
    1280   1285   1290

Pro Phe Glu Ala Phe Ile Ile Phe Ser Ile Arg His Glu Ile Arg
    1295   1300   1305

Arg Ile Asp Leu His Lys Arg Asp Tyr Ser Leu Leu Val Pro Gly
    1310   1315   1320

Leu Arg Asn Thr Ile Ala Leu Asp Phe His Phe Asn Gln Ser Leu
    1325   1330   1335

```
Leu Tyr  Trp Thr Asp Val Val  Glu Asp Arg Ile Tyr  Arg Gly Lys
    1340             1345              1350
```

```
Leu Ser  Glu Ser Gly Gly Val  Ser Ala Ile Glu Val  Val Val Glu
    1355             1360              1365
```

```
His Gly  Leu Ala Thr Pro Glu  Gly Leu Thr Val Asp  Trp Ile Ala
    1370             1375              1380
```

```
Gly Asn  Ile Tyr Trp Ile Asp  Ser Asn Leu Asp Gln  Ile Glu Val
    1385             1390              1395
```

```
Ala Lys  Leu Asp Gly Ser Leu  Arg Thr Thr Leu Ile  Ala Gly Ala
    1400             1405              1410
```

```
Met Glu  His Pro Arg Ala Ile  Ala Leu Asp Pro Arg  Tyr Gly Ile
    1415             1420              1425
```

```
Leu Phe  Trp Thr Asp Trp Asp  Ala Asn Phe Pro Arg  Ile Glu Ser
    1430             1435              1440
```

```
Ala Ser  Met Ser Gly Ala Gly  Arg Lys Thr Ile Tyr  Lys Asp Met
    1445             1450              1455
```

```
Lys Thr  Gly Ala Trp Pro Asn  Gly Leu Thr Val Asp  His Phe Glu
    1460             1465              1470
```

```
Lys Arg  Ile Val Trp Thr Asp  Ala Arg Ser Asp Ala  Ile Tyr Ser
    1475             1480              1485
```

```
Ala Leu  Tyr Asp Gly Thr Asn  Met Ile Glu Ile Ile  Arg Gly His
    1490             1495              1500
```

```
Glu Tyr  Leu Ser His Pro Phe  Ala Val Ser Leu Tyr  Gly Ser Glu
    1505             1510              1515
```

```
Val Tyr  Trp Thr Asp Trp Arg  Thr Asn Thr Leu Ser  Lys Ala Asn
    1520             1525              1530
```

```
Lys Trp  Thr Gly Gln Asn Val  Ser Val Ile Gln Lys  Thr Ser Ala
    1535             1540              1545
```

```
Gln Pro  Phe Asp Leu Gln Ile  Tyr His Pro Ser Arg  Gln Pro Gln
    1550             1555              1560
```

```
Ala Pro  Asn Pro Cys Ala Ala  Asn Asp Gly Lys Gly  Pro Cys Ser
    1565             1570              1575
```

```
His Met  Cys Leu Ile Asn His  Asn Arg Ser Ala Ala  Cys Ala Cys
    1580             1585              1590

Pro His  Leu Met Lys Leu Ser  Ser Asp Lys Lys Thr  Cys Tyr Glu
    1595             1600              1605

Met Lys  Lys Phe Leu Leu Tyr  Ala Arg Arg Ser Glu  Ile Arg Gly
    1610             1615              1620

Val Asp  Ile Asp Asn Pro Tyr  Phe Asn Phe Ile Thr  Ala Phe Thr
    1625             1630              1635

Val Pro  Asp Ile Asp Asp Val  Thr Val Ile Asp Phe  Asp Ala Ser
    1640             1645              1650

Glu Glu  Arg Leu Tyr Trp Thr  Asp Ile Lys Thr Gln  Thr Ile Lys
    1655             1660              1665

Arg Ala  Phe Ile Asn Gly Thr  Gly Leu Glu Thr Val  Ile Ser Arg
    1670             1675              1680

Asp Ile  Gln Ser Ile Arg Gly  Leu Ala Val Asp Trp  Val Ser Arg
    1685             1690              1695

Asn Leu  Tyr Trp Ile Ser Ser  Glu Phe Asp Glu Thr  Gln Ile Asn
    1700             1705              1710

Val Ala  Arg Leu Asp Gly Ser  Leu Lys Thr Ser Ile  Ile His Gly
    1715             1720              1725

Ile Asp  Lys Pro Gln Cys Leu  Ala Ala His Pro Val  Arg Gly Lys
    1730             1735              1740

Leu Tyr  Trp Thr Asp Gly Asn  Thr Ile Asn Met Ala  Asn Met Asp
    1745             1750              1755

Gly Ser  Asn Ser Lys Ile Leu  Phe Gln Asn Gln Lys  Glu Pro Val
    1760             1765              1770

Gly Leu  Ser Ile Asp Tyr Val  Glu Asn Lys Leu Tyr  Trp Ile Ser
    1775             1780              1785

Ser Gly  Asn Gly Thr Ile Asn  Arg Cys Asn Leu Asp  Gly Gly Asn
    1790             1795              1800

Leu Glu  Val Ile Glu Ser Met  Lys Glu Glu Leu Thr  Lys Ala Thr
    1805             1810              1815
```

```
Ala Leu  Thr Ile Met Asp Lys  Lys Leu Trp Trp Ala  Asp Gln Asn
    1820             1825              1830

Leu Ala  Gln Leu Gly Thr Cys  Ser Lys Arg Asp Gly  Arg Asn Pro
    1835             1840              1845

Thr Ile  Leu Arg Asn Lys Thr  Ser Gly Val Val His  Met Lys Val
    1850             1855              1860

Tyr Asp  Lys Glu Ala Gln Gln  Gly Ser Asn Ser Cys  Gln Leu Asn
    1865             1870              1875

Asn Gly  Gly Cys Ser Gln Leu  Cys Leu Pro Thr Ser  Glu Thr Thr
    1880             1885              1890

Arg Thr  Cys Met Cys Thr Val  Gly Tyr Tyr Leu Gln  Lys Asn Arg
    1895             1900              1905

Met Ser  Cys Gln Gly Ile Glu  Ser Phe Leu Met Tyr  Ser Val His
    1910             1915              1920

Glu Gly  Ile Arg Gly Ile Pro  Leu Glu Pro Ser Asp  Lys Met Asp
    1925             1930              1935

Ala Leu  Met Pro Ile Ser Gly  Thr Ser Phe Ala Val  Gly Ile Asp
    1940             1945              1950

Phe His  Ala Glu Asn Asp Thr  Ile Tyr Trp Thr Asp  Met Gly Phe
    1955             1960              1965

Asn Lys  Ile Ser Arg Ala Lys  Arg Asp Gln Thr Trp  Lys Glu Asp
    1970             1975              1980

Ile Ile  Thr Asn Gly Leu Gly  Arg Val Glu Gly Ile  Ala Val Asp
    1985             1990              1995

Trp Ile  Ala Gly Asn Ile Tyr  Trp Thr Asp His Gly  Phe Asn Leu
    2000             2005              2010

Ile Glu  Val Ala Arg Leu Asn  Gly Ser Phe Arg Tyr  Val Ile Ile
    2015             2020              2025

Ser Gln  Gly Leu Asp Gln Pro  Arg Ser Ile Ala Val  His Pro Glu
    2030             2035              2040

Lys Gly  Leu Leu Phe Trp Thr  Glu Trp Gly Gln Met  Pro Cys Ile
    2045             2050              2055
```

```
Gly Lys  Ala Arg Leu Asp Gly  Ser Glu Lys Val Val  Leu Val Ser
    2060              2065              2070

Met Gly  Ile Ala Trp Pro Asn  Gly Ile Ser Ile Asp  Tyr Glu Glu
    2075              2080              2085

Asn Lys  Leu Tyr Trp Cys Asp  Ala Arg Thr Asp Lys  Ile Glu Arg
    2090              2095              2100

Ile Asp  Leu Glu Thr Gly Gly  Asn Arg Glu Met Val  Leu Ser Gly
    2105              2110              2115

Ser Asn  Val Asp Met Phe Ser  Val Ala Val Phe Gly  Ala Tyr Ile
    2120              2125              2130

Tyr Trp  Ser Asp Arg Ala His  Ala Asn Gly Ser Val  Arg Arg Gly
    2135              2140              2145

His Lys  Asn Asp Ala Thr Glu  Thr Ile Thr Met Arg  Thr Gly Leu
    2150              2155              2160

Gly Val  Asn Leu Lys Glu Val  Lys Ile Phe Asn Arg  Val Arg Glu
    2165              2170              2175

Lys Gly  Thr Asn Val Cys Ala  Arg Asp Asn Gly Gly  Cys Lys Gln
    2180              2185              2190

Leu Cys  Leu Tyr Arg Gly Asn  Ser Arg Arg Thr Cys  Ala Cys Ala
    2195              2200              2205

His Gly  Tyr Leu Ala Glu Asp  Gly Val Thr Cys Leu  Arg His Glu
    2210              2215              2220

Gly Tyr  Leu Leu Tyr Ser Gly  Arg Thr Ile Leu Lys  Ser Ile His
    2225              2230              2235

Leu Ser  Asp Glu Thr Asn Leu  Asn Ser Pro Ile Arg  Pro Tyr Glu
    2240              2245              2250

Asn Pro  Arg Tyr Phe Lys Asn  Val Ile Ala Leu Ala  Phe Asp Tyr
    2255              2260              2265

Asn Gln  Arg Arg Lys Gly Thr  Asn Arg Ile Phe Tyr  Ser Asp Ala
    2270              2275              2280

His Phe  Gly Asn Ile Gln Leu  Ile Lys Asp Asn Trp  Glu Asp Arg
    2285              2290              2295
```

Gln Val Ile Val Glu Asn Val Gly Ser Val Glu Gly Leu Ala Tyr
    2300   2305   2310

His Arg Ala Trp Asp Thr Leu Tyr Trp Thr Ser Ser Thr Thr Ser
    2315   2320   2325

Ser Ile Thr Arg His Thr Val Asp Gln Thr Arg Pro Gly Ala Phe
    2330   2335   2340

Asp Arg Glu Ala Val Ile Thr Met Ser Glu Asp Asp His Pro His
    2345   2350   2355

Val Leu Ala Leu Asp Glu Cys Gln Asn Leu Met Phe Trp Thr Asn
    2360   2365   2370

Trp Asn Glu Gln His Pro Ser Ile Met Arg Ser Thr Leu Thr Gly
    2375   2380   2385

Lys Asn Ala Gln Val Val Val Ser Thr Asp Ile Leu Thr Pro Asn
    2390   2395   2400

Gly Leu Thr Ile Asp Tyr Arg Ala Glu Lys Leu Tyr Phe Ser Asp
    2405   2410   2415

Gly Ser Leu Gly Lys Ile Glu Arg Cys Glu Tyr Asp Gly Ser Gln
    2420   2425   2430

Arg His Val Ile Val Lys Ser Gly Pro Gly Thr Phe Leu Ser Leu
    2435   2440   2445

Ala Val Tyr Asp Asn Tyr Ile Phe Trp Ser Asp Trp Gly Arg Arg
    2450   2455   2460

Ala Ile Leu Arg Ser Asn Lys Tyr Thr Gly Gly Asp Thr Lys Ile
    2465   2470   2475

Leu Arg Ser Asp Ile Pro His Gln Pro Met Gly Ile Ile Ala Val
    2480   2485   2490

Ala Asn Asp Thr Asn Ser Cys Glu Leu Ser Pro Cys Ala Leu Leu
    2495   2500   2505

Asn Gly Gly Cys His Asp Leu Cys Leu Leu Thr Pro Asn Gly Arg
    2510   2515   2520

Val Asn Cys Ser Cys Arg Gly Asp Arg Ile Leu Leu Glu Asp Asn
    2525   2530   2535

Arg Cys Val Thr Lys Asn Ser Ser Cys Asn Ala Tyr Ser Glu Phe
    2540   2545   2550

Glu Cys Gly Asn Gly Glu Cys Ile Asp Tyr Gln Leu Thr Cys Asp
    2555   2560   2565

Gly Ile Pro His Cys Lys Asp Lys Ser Asp Glu Lys Leu Leu Tyr
    2570   2575   2580

Cys Glu Asn Arg Ser Cys Arg Arg Gly Phe Lys Pro Cys Tyr Asn
    2585   2590   2595

Arg Arg Cys Ile Pro His Gly Lys Leu Cys Asp Gly Glu Asn Asp
    2600   2605   2610

Cys Gly Asp Asn Ser Asp Glu Leu Asp Cys Lys Val Ser Thr Cys
    2615   2620   2625

Ala Thr Val Glu Phe Arg Cys Ala Asp Gly Thr Cys Ile Pro Arg
    2630   2635   2640

Ser Ala Arg Cys Asn Gln Asn Ile Asp Cys Ala Asp Ala Ser Asp
    2645   2650   2655

Glu Lys Asn Cys Asn Asn Thr Asp Cys Thr His Phe Tyr Lys Leu
    2660   2665   2670

Gly Val Lys Thr Thr Gly Phe Ile Arg Cys Asn Ser Thr Ser Leu
    2675   2680   2685

Cys Val Leu Pro Thr Trp Ile Cys Asp Gly Ser Asn Asp Cys Gly
    2690   2695   2700

Asp Tyr Ser Asp Glu Leu Lys Cys Pro Val Gln Asn Lys His Lys
    2705   2710   2715

Cys Glu Glu Asn Tyr Phe Ser Cys Pro Ser Gly Arg Cys Ile Leu
    2720   2725   2730

Asn Thr Trp Ile Cys Asp Gly Gln Lys Asp Cys Glu Asp Gly Arg
    2735   2740   2745

Asp Glu Phe His Cys Asp Ser Ser Cys Ser Trp Asn Gln Phe Ala
    2750   2755   2760

Cys Ser Ala Gln Lys Cys Ile Ser Lys His Trp Ile Cys Asp Gly
    2765   2770   2775

```
Glu Asp  Asp Cys Gly Asp Gly  Leu Asp Glu Ser Asp  Ser Ile Cys
    2780               2785                2790

Gly Ala  Ile Thr Cys Ala Ala  Asp Met Phe Ser Cys  Gln Gly Ser
    2795               2800                2805

Arg Ala  Cys Val Pro Arg His  Trp Leu Cys Asp Gly  Glu Arg Asp
    2810               2815                2820

Cys Pro  Asp Gly Ser Asp Glu  Leu Ser Thr Ala Gly  Cys Ala Pro
    2825               2830                2835

Asn Asn  Thr Cys Asp Glu Asn  Ala Phe Met Cys His  Asn Lys Val
    2840               2845                2850

Cys Ile  Pro Lys Gln Phe Val  Cys Asp His Asp Asp  Asp Cys Gly
    2855               2860                2865

Asp Gly  Ser Asp Glu Ser Pro  Gln Cys Gly Tyr Arg  Gln Cys Gly
    2870               2875                2880

Thr Glu  Glu Phe Ser Cys Ala  Asp Gly Arg Cys Leu  Leu Asn Thr
    2885               2890                2895

Gln Trp  Gln Cys Asp Gly Asp  Phe Asp Cys Pro Asp  His Ser Asp
    2900               2905                2910

Glu Ala  Pro Leu Asn Pro Lys  Cys Lys Ser Ala Glu  Gln Ser Cys
    2915               2920                2925

Asn Ser  Ser Phe Phe Met Cys  Lys Asn Gly Arg Cys  Ile Pro Ser
    2930               2935                2940

Gly Gly  Leu Cys Asp Asn Lys  Asp Asp Cys Gly Asp  Gly Ser Asp
    2945               2950                2955

Glu Arg  Asn Cys His Ile Asn  Glu Cys Leu Ser Lys  Lys Val Ser
    2960               2965                2970

Gly Cys  Ser Gln Asp Cys Gln  Asp Leu Pro Val Ser  Tyr Lys Cys
    2975               2980                2985

Lys Cys  Trp Pro Gly Phe Gln  Leu Lys Asp Asp Gly  Lys Thr Cys
    2990               2995                3000

Val Asp  Ile Asp Glu Cys Ser  Ser Gly Phe Pro Cys  Ser Gln Gln
    3005               3010                3015
```

```
Cys Ile  Asn Thr Tyr Gly Thr  Tyr Lys Cys Leu Cys  Thr Asp Gly
    3020             3025             3030

Tyr Glu  Ile Gln Pro Asp Asn  Pro Asn Gly Cys Lys  Ser Leu Ser
    3035             3040             3045

Asp Glu  Glu Pro Phe Leu Ile  Leu Ala Asp His His  Glu Ile Arg
    3050             3055             3060

Lys Ile  Ser Thr Asp Gly Ser  Asn Tyr Thr Leu Leu  Lys Gln Gly
    3065             3070             3075

Leu Asn  Asn Val Ile Ala Ile  Asp Phe Asp Tyr Arg  Glu Glu Phe
    3080             3085             3090

Ile Tyr  Trp Ile Asp Ser Ser  Arg Pro Asn Gly Ser  Arg Ile Asn
    3095             3100             3105

Arg Met  Cys Leu Asn Gly Ser  Asp Ile Lys Val Val  His Asn Thr
    3110             3115             3120

Ala Val  Pro Asn Ala Leu Ala  Val Asp Trp Ile Gly  Lys Asn Leu
    3125             3130             3135

Tyr Trp  Ser Asp Thr Glu Lys  Arg Ile Ile Glu Val  Ser Lys Leu
    3140             3145             3150

Asn Gly  Leu Tyr Pro Thr Ile  Leu Val Ser Lys Arg  Leu Lys Phe
    3155             3160             3165

Pro Arg  Asp Leu Ser Leu Asp  Pro Gln Ala Gly Tyr  Leu Tyr Trp
    3170             3175             3180

Ile Asp  Cys Cys Glu Tyr Pro  His Ile Gly Arg Val  Gly Met Asp
    3185             3190             3195

Gly Thr  Asn Gln Ser Val Val  Ile Glu Thr Lys Ile  Ser Arg Pro
    3200             3205             3210

Met Ala  Leu Thr Ile Asp Tyr  Val Asn Arg Arg Leu  Tyr Trp Ala
    3215             3220             3225

Asp Glu  Asn His Ile Glu Phe  Ser Asn Met Asp Gly  Ser His Arg
    3230             3235             3240

His Lys  Val Pro Asn Gln Asp  Ile Pro Gly Val Ile  Ala Leu Thr
    3245             3250             3255
```

Leu Phe Glu Asp Tyr Ile Tyr Trp Thr Asp Gly Lys Thr Lys Ser
    3260   3265   3270

Leu Ser Arg Ala His Lys Thr Ser Gly Ala Asp Arg Leu Ser Leu
    3275   3280   3285

Ile Tyr Ser Trp His Ala Ile Thr Asp Ile Gln Val Tyr His Ser
    3290   3295   3300

Tyr Arg Gln Pro Asp Val Ser Lys His Leu Cys Met Ile Asn Asn
    3305   3310   3315

Gly Gly Cys Ser His Leu Cys Leu Leu Ala Pro Gly Lys Thr His
    3320   3325   3330

Thr Cys Ala Cys Pro Thr Asn Phe Tyr Leu Ala Ala Asp Asn Arg
    3335   3340   3345

Thr Cys Leu Ser Asn Cys Thr Ala Ser Gln Phe Arg Cys Lys Thr
    3350   3355   3360

Asp Lys Cys Ile Pro Phe Trp Trp Lys Cys Asp Thr Val Asp Asp
    3365   3370   3375

Cys Gly Asp Gly Ser Asp Glu Pro Asp Asp Cys Pro Glu Phe Arg
    3380   3385   3390

Cys Gln Pro Gly Arg Phe Gln Cys Gly Thr Gly Leu Cys Ala Leu
    3395   3400   3405

Pro Ala Phe Ile Cys Asp Gly Glu Asn Asp Cys Gly Asp Asn Ser
    3410   3415   3420

Asp Glu Leu Asn Cys Asp Thr His Val Cys Leu Ser Gly Gln Phe
    3425   3430   3435

Lys Cys Thr Lys Asn Gln Lys Cys Ile Pro Val Asn Leu Arg Cys
    3440   3445   3450

Asn Gly Gln Asp Asp Cys Gly Asp Glu Glu Asp Glu Arg Asp Cys
    3455   3460   3465

Pro Glu Asn Ser Cys Ser Pro Asp Tyr Phe Gln Cys Lys Thr Thr
    3470   3475   3480

Lys His Cys Ile Ser Lys Leu Trp Val Cys Asp Glu Asp Pro Asp
    3485   3490   3495

Cys Ala   Asp Ala Ser Asp Glu   Ala Asn Cys Asp Lys   Lys Thr Cys
    3500   3505   3510

Gly Pro   His Glu Phe Gln Cys   Lys Asn Asn Asn Cys   Ile Pro Asp
    3515   3520   3525

His Trp   Arg Cys Asp Ser Gln   Asn Asp Cys Ser Asp   Asn Ser Asp
    3530   3535   3540

Glu Glu   Asn Cys Lys Pro Gln   Thr Cys Thr Leu Lys   Asp Phe Leu
    3545   3550   3555

Cys Ala   Asn Gly Asp Cys Val   Ser Ser Arg Phe Trp   Cys Asp Gly
    3560   3565   3570

Asp Phe   Asp Cys Ala Asp Gly   Ser Asp Glu Arg Asn   Cys Glu Thr
    3575   3580   3585

Ser Cys   Ser Lys Asp Gln Phe   Arg Cys Ser Asn Gly   Gln Cys Ile
    3590   3595   3600

Pro Ala   Lys Trp Lys Cys Asp   Gly His Glu Asp Cys   Lys Tyr Gly
    3605   3610   3615

Glu Asp   Glu Lys Ser Cys Glu   Pro Ala Ser Pro Thr   Cys Ser Ser
    3620   3625   3630

Arg Glu   Tyr Ile Cys Ala Ser   Asp Gly Cys Ile Ser   Ala Ser Leu
    3635   3640   3645

Lys Cys   Asn Gly Glu Tyr Asp   Cys Ala Asp Gly Ser   Asp Glu Met
    3650   3655   3660

Asp Cys   Val Thr Glu Cys Lys   Glu Asp Gln Phe Arg   Cys Lys Asn
    3665   3670   3675

Lys Ala   His Cys Ile Pro Ile   Arg Trp Leu Cys Asp   Gly Ile His
    3680   3685   3690

Asp Cys   Val Asp Gly Ser Asp   Glu Glu Asn Cys Glu   Arg Gly Gly
    3695   3700   3705

Asn Ile   Cys Arg Ala Asp Glu   Phe Leu Cys Asn Asn   Ser Leu Cys
    3710   3715   3720

Lys Leu   His Phe Trp Val Cys   Asp Gly Glu Asp Asp   Cys Gly Asp
    3725   3730   3735

Asn Ser Asp Glu Ala Pro Asp Met Cys Val Lys Phe Leu Cys Pro
    3740   3745   3750

Ser Thr Arg Pro His Arg Cys Arg Asn Asn Arg Ile Cys Leu Gln
    3755   3760   3765

Ser Glu Gln Met Cys Asn Gly Ile Asp Glu Cys Gly Asp Asn Ser
    3770   3775   3780

Asp Glu Asp His Cys Gly Gly Lys Leu Thr Tyr Lys Ala Arg Pro
    3785   3790   3795

Cys Lys Lys Asp Glu Phe Ala Cys Ser Asn Lys Lys Cys Ile Pro
    3800   3805   3810

Met Asp Leu Gln Cys Asp Arg Leu Asp Asp Cys Gly Asp Gly Ser
    3815   3820   3825

Asp Glu Gln Gly Cys Arg Ile Ala Pro Thr Glu Tyr Thr Cys Glu
    3830   3835   3840

Asp Asn Val Asn Pro Cys Gly Asp Asp Ala Tyr Cys Asn Gln Ile
    3845   3850   3855

Lys Thr Ser Val Phe Cys Arg Cys Lys Pro Gly Phe Gln Arg Asn
    3860   3865   3870

Met Lys Asn Arg Gln Cys Glu Asp Leu Asn Glu Cys Leu Val Phe
    3875   3880   3885

Gly Thr Cys Ser His Gln Cys Ile Asn Val Glu Gly Ser Tyr Lys
    3890   3895   3900

Cys Val Cys Asp Gln Asn Phe Gln Glu Arg Asn Asn Thr Cys Ile
    3905   3910   3915

Ala Glu Gly Ser Glu Asp Gln Val Leu Tyr Ile Ala Asn Asp Thr
    3920   3925   3930

Asp Ile Leu Gly Phe Ile Tyr Pro Phe Asn Tyr Ser Gly Asp His
    3935   3940   3945

Gln Gln Ile Ser His Ile Glu His Asn Ser Arg Ile Thr Gly Met
    3950   3955   3960

Asp Val Tyr Tyr Gln Arg Asp Met Ile Ile Trp Ser Thr Gln Phe
    3965   3970   3975

Asn Pro Gly Gly Ile Phe Tyr Lys Arg Ile His Gly Arg Glu Lys
    3980   3985   3990

Arg Gln Ala Asn Ser Gly Leu Ile Cys Pro Glu Phe Lys Arg Pro
    3995   4000   4005

Arg Asp Ile Ala Val Asp Trp Val Ala Gly Asn Ile Tyr Trp Thr
    4010   4015   4020

Asp His Ser Arg Met His Trp Phe Ser Tyr Tyr Thr Thr His Trp
    4025   4030   4035

Thr Ser Leu Arg Tyr Ser Ile Asn Val Gly Gln Leu Asn Gly Pro
    4040   4045   4050

Asn Cys Thr Arg Leu Leu Thr Asn Met Ala Gly Glu Pro Tyr Ala
    4055   4060   4065

Ile Ala Val Asn Pro Lys Arg Gly Met Met Tyr Trp Thr Val Val
    4070   4075   4080

Gly Asp His Ser His Ile Glu Glu Ala Ala Met Asp Gly Thr Leu
    4085   4090   4095

Arg Arg Ile Leu Val Gln Lys Asn Leu Gln Arg Pro Thr Gly Leu
    4100   4105   4110

Ala Val Asp Tyr Phe Ser Glu Arg Ile Tyr Trp Ala Asp Phe Glu
    4115   4120   4125

Leu Ser Ile Ile Gly Ser Val Leu Tyr Asp Gly Ser Asn Ser Val
    4130   4135   4140

Val Ser Val Ser Ser Lys Gln Gly Leu Leu His Pro His Arg Ile
    4145   4150   4155

Asp Ile Phe Glu Asp Tyr Ile Tyr Gly Ala Gly Pro Lys Asn Gly
    4160   4165   4170

Val Phe Arg Val Gln Lys Phe Gly His Gly Ser Val Glu Tyr Leu
    4175   4180   4185

Ala Leu ·Asn Ile Asp Lys Thr Lys Gly Val Leu Ile Ser His Arg
    4190   4195   4200

Tyr Lys Gln Leu Asp Leu Pro Asn Pro Cys Leu Asp Leu Ala Cys
    4205   4210   4215

```
Glu Phe Leu Cys Leu Leu Asn Pro Ser Gly Ala Thr Cys Val Cys
4220                4225            4230

Pro Glu Gly Lys Tyr Leu Ile Asn Gly Thr Cys Asn Asp Asp Ser
4235                4240            4245

Leu Leu Asp Asp Ser Cys Lys Leu Thr Cys Glu Asn Gly Gly Arg
4250                4255            4260

Cys Ile Leu Asn Glu Lys Gly Asp Leu Arg Cys His Cys Trp Pro
4265                4270            4275

Ser Tyr Ser Gly Glu Arg Cys Glu Val Asn His Cys Ser Asn Tyr
4280                4285            4290

Cys Gln Asn Gly Gly Thr Cys Val Pro Ser Val Leu Gly Arg Pro
4295                4300            4305

Thr Cys Ser Cys Ala Leu Gly Phe Thr Gly Pro Asn Cys Gly Lys
4310                4315            4320

Thr Val Cys Glu Asp Phe Cys Gln Asn Gly Gly Thr Cys Ile Val
4325                4330            4335

Thr Ala Gly Asn Gln Pro Tyr Cys His Cys Gln Pro Glu Tyr Thr
4340                4345            4350

Gly Asp Arg Cys Gln Tyr Tyr Val Cys His His Tyr Cys Val Asn
4355                4360            4365

Ser Glu Ser Cys Thr Ile Gly Asp Asp Gly Ser Leu Glu Cys Val
4370                4375            4380

Cys Pro Thr Arg Tyr Glu Gly Pro Lys Cys Glu Val Asp Lys Cys
4385                4390            4395

Val Arg Cys His Gly Gly His Cys Ile Ile Asn Lys Asp Ser Glu
4400                4405            4410

Asp Ile Phe Cys Asn Cys Thr Asn Gly Lys Ile Ala Ser Ser Cys
4415                4420            4425

Gln Leu Cys Asp Gly Tyr Cys Tyr Asn Gly Gly Thr Cys Gln Leu
4430                4435            4440

Asp Pro Glu Thr Asn Val Pro Val Cys Leu Cys Ser Thr Asn Trp
4445                4450            4455
```

```
Ser Gly  Thr Gln Cys Glu Arg  Pro Ala Pro Lys Ser  Ser Lys Ser
    4460             4465             4470
```

```
Asp His  Ile Ser Thr Arg Ser  Ile Ala Ile Ile Val  Pro Leu Val
    4475             4480             4485
```

```
Leu Leu  Val Thr Leu Ile Thr  Thr Leu Val Ile Gly  Leu Val Leu
    4490             4495             4500
```

```
Cys Lys  Arg Lys Arg Arg Thr  Lys Thr Ile Arg Arg  Gln Pro Ile
    4505             4510             4515
```

```
Ile Asn  Gly Gly Ile Asn Val  Glu Ile Gly Asn Pro  Ser Tyr Asn
    4520             4525             4530
```

```
Met Tyr  Glu Val Asp His Asp  His Asn Asp Gly Gly  Leu Leu Asp
    4535             4540             4545
```

```
Pro Gly  Phe Met Ile Asp Pro  Thr Lys Ala Arg Tyr  Ile Gly Gly
    4550             4555             4560
```

```
Gly Pro  Ser Ala Phe Lys Leu  Pro His Thr Ala Pro  Pro Ile Tyr
    4565             4570             4575
```

```
Leu Asn  Ser Asp Leu Lys Gly  Pro Leu Thr Ala Gly  Pro Thr Asn
    4580             4585             4590
```

```
Tyr Ser  Asn Pro Val Tyr Ala  Lys Leu Tyr Met Asp  Gly Gln Asn
    4595             4600             4605
```

```
Cys Arg  Asn Ser Leu Gly Ser  Val Asp Glu Arg Lys  Glu Leu Leu
    4610             4615             4620
```

```
Pro Lys  Lys Ile Glu Ile Gly  Ile Arg Glu Thr Val  Ala
    4625             4630             4635
```

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<210>   34
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<212>   DNA
<213>   Homo sapiens

<220>
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<223>   n = a or c or g or t


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atccgaccac atttcactct caccgctgta ggaatccaga tgcaggccaa gtacagcagc     120
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acgagggaca tgctggatga tgatggggac accaccatga gcctgcattc tcaagcctct      180

gccacaactc ggcatccaga gccccggcgc acagagcaca gggctccctc ttcaacgtgg      240

cgaccagtgg ccctgaccct gctgactttg tgcttggtgc tgctgatagg gctggcagcc      300

ctggggcttt tgttttttca gtactaccag ctctccaata ctggtcaaga caccatttct      360

caaatggaag aaagattagg aaatacgtcc caagagttgc aatctcttca agtccagaat      420

ataaagcttg caggaagtct gcagcatgtg gctgaaaaac tctgtcgtga gctgtataac      480

aaagctggag cacacaggtg cagcccttgt acagaacaat ggaaatggca tggagacaat      540

tgctaccagt tctataaaga cagcaaaagt tgggaggact gtaaatattt ctgccttagt      600

gaaaactcta ccatgctgaa gataaacaaa caagaagacc tggaatttgc cgcgtctcag      660

agctactctg agttttctta ctcttattgg acagggcttt tgcgccctga cagtggcaag      720

gcctggctgt ggatggatgg aacccctttc acttctgaac tgttccatat tataatagat      780

gtcaccagcc caagaagcag agactgtgtg gccatcctta atgggatgat cttctcaaag      840

gactgcaaag aattgaagcg ttgtgtctgt gagagaaggg caggaatggt gaagccagag      900

agcctccatg tcccccctga aacattaggc gaaggtgact gattcgccct ctgcaactac      960

aaatagcaga gtgagccagg cggtgccaaa gcaagggcta gttgagacat tgggaaatgg     1020

aacataatca ggaaagacta tctctctgac tagtacaaaa tgggttctcg tgtttcctgt     1080

tcaggatcac cagcatttct gagcttgggt ttatgcacgt atttaacagt cacaagaagt     1140

cttatttaca tgccaccaac caacctcaga aacccataat gtcatctgcc ttcttggctt     1200

agagataact tttagctctc tttcttctca atgtctaata tcacctccct gttttcatgt     1260

cttccttaca cttggtggaa taagaaactt tttgaagtag aggaaataca ttgaggtaac     1320

atccttttct ctgacagtca agtagtccat cagaaattgg cagtcacttc ccagattgta     1380

ccagcaaata cacaaggaat tcttttttgtt tgtttcagtt catactagtc ccttcccaat     1440

ccatcagtaa agaccccatc tgccttgtcc atgccgtttc ccaacaggga tgtcacttga     1500

tatgagaatc tcaaatctca atgccttata agcattcctt cctgtgtcca ttaagactct     1560

gataattgtc tcccctccat aggaatttct cccaggaaag aaatatatcc ccatctccgt     1620

ttcatatcag aactaccgtc cccgatattc ccttcagaga gattaaagac cagaaaaaag     1680

tgagcctctt catctgcacc tgtaatagtt tcagttccta ttttcttcca ttgacccata     1740

tttatacctt tcaggtactg aagatttaat aataataaat gtaaatactg tgaagtgtgt     1800

gtgattttac aatggactta tggttggtgg gaaaattcag catggaaatg cttttcaaaa     1860

tatgatagcg gtcattattt tgattgtgcc ttactgaaag tttttgggga atttacaaga     1920

gtactgatta catgattatc tggagaaaat aagatgtctt tgaaatacat gttggcttca     1980

agaaaacagt tttaacgttt tcctaaaatg aaatcttttg aggtgagctt atggcatcaa     2040
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cacatggttg atgaggaagc tgagttgcat tagtgcacat gatttccagt caggtcatgg   2100

gaaatgaaca gagacagtga catctttgta gctgctcctt tgtgaggcac ttctttcttg   2160

agatgactcc atgcacaaat ataacaggga tcattgggaa tgacaccatc acagccacca   2220

agnttattgg gttactgata at                                             2242
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<210> 35
<211> 280
<212> PRT
<213> Homo sapiens

<400> 35

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Met Gln Ala Lys Tyr Ser Ser Thr Arg Asp Met Leu Asp Asp Asp Gly
1               5                   10                  15

Asp Thr Thr Met Ser Leu His Ser Gln Ala Ser Ala Thr Thr Arg His
                20                  25                  30

Pro Glu Pro Arg Arg Thr Glu His Arg Ala Pro Ser Ser Thr Trp Arg
            35                  40                  45

Pro Val Ala Leu Thr Leu Leu Thr Leu Cys Leu Val Leu Leu Ile Gly
        50                  55                  60

Leu Ala Ala Leu Gly Leu Leu Phe Phe Gln Tyr Tyr Gln Leu Ser Asn
65                  70                  75                  80

Thr Gly Gln Asp Thr Ile Ser Gln Met Glu Glu Arg Leu Gly Asn Thr
                85                  90                  95

Ser Gln Glu Leu Gln Ser Leu Gln Val Gln Asn Ile Lys Leu Ala Gly
            100                 105                 110

Ser Leu Gln His Val Ala Glu Lys Leu Cys Arg Glu Leu Tyr Asn Lys
            115                 120                 125

Ala Gly Ala His Arg Cys Ser Pro Cys Thr Glu Gln Trp Lys Trp His
            130                 135                 140

Gly Asp Asn Cys Tyr Gln Phe Tyr Lys Asp Ser Lys Ser Trp Glu Asp
145                 150                 155                 160

Cys Lys Tyr Phe Cys Leu Ser Glu Asn Ser Thr Met Leu Lys Ile Asn
                165                 170                 175

Lys Gln Glu Asp Leu Glu Phe Ala Ala Ser Gln Ser Tyr Ser Glu Phe
            180                 185                 190

Phe Tyr Ser Tyr Trp Thr Gly Leu Leu Arg Pro Asp Ser Gly Lys Ala
            195                 200                 205

Trp Leu Trp Met Asp Gly Thr Pro Phe Thr Ser Glu Leu Phe His Ile
        210                 215                 220

Ile Ile Asp Val Thr Ser Pro Arg Ser Arg Asp Cys Val Ala Ile Leu
225                 230                 235                 240

Asn Gly Met Ile Phe Ser Lys Asp Cys Lys Glu Leu Lys Arg Cys Val
                245                 250                 255
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```
Cys Glu Arg Arg Ala Gly Met Val Lys Pro Glu Ser Leu His Val Pro
            260                 265             270

Pro Glu Thr Leu Gly Glu Gly Asp
        275             280
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<210>  36
<211>  2323
<212>  DNA
<213>  Homo sapiens

<220>
<221>  misc_feature
<223>  n = a or c or g or t


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acgagggaca tgctggatga tgatggggac accaccatga gcctgcattc tcaagcctct    180

gccacaactc ggcatccaga gccccggcgc acagagcaca gggctccctc ttcaacgtgg    240

cgaccagtgg ccctgaccct gctgactttg tgcttggtgc tgctgatagg gctggcagcc    300

ctggggcttt tgttttttca gtactaccag ctctccaata ctggtcaaga caccatttct    360

caaatggaag aaagattagg aaatacgtcc caagagttgc aatctcttca agtccagaat    420

ataaagcttg caggaagtct gcagcatgtg gctgaaaaac tctgtcgtga gctgtataac    480

aaagctggag gctatacaag aaacatggtg ccagcatctg cttcttctga gagcctcagg    540

cagcttccac acatggggga aagtgcagca gcacacaggt gcagcccttg tacagaacaa    600

tggaaatggc atggagacaa ttgctaccag ttctataaag acagcaaaag ttgggaggac    660

tgtaaatatt tctgccttag tgaaaactct accatgctga agataaacaa acaagaagac    720

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ttgcgccctg acagtggcaa ggcctggctg tggatggatg gaaccccttt cacttctgaa    840

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tgattcgccc tctgcaacta caaatagcag agtgagccag gcggtgccaa agcaagggct   1080

agttgagaca ttgggaaatg aacataatc aggaaagact atctctctga ctagtacaaa    1140

atgggttctc gtgtttcctg ttcaggatca ccagcatttc tgagcttggg tttatgcacg   1200

tatttaacag tcacaagaag tcttatttac atgccaccaa ccaacctcag aaacccataa   1260

tgtcatctgc cttcttggct tagagataac ttttagctct ctttcttctc aatgtctaat   1320

atcacctccc tgtttcatg tcttccttac acttggtgga ataagaaact ttttgaagta    1380
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gaggaaatac attgaggtaa catccttttc tctgacagtc aagtagtcca tcagaaattg   1440

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tcatactagt cccttcccaa tccatcagta aagaccccat ctgccttgtc catgccgttt   1560

cccaacaggg atgtcacttg atatgagaat ctcaaatctc aatgccttat aagcattcct   1620

tcctgtgtcc attaagactc tgataattgt ctcccctcca taggaatttc tcccaggaaa   1680

gaaatatatc cccatctccg tttcatatca gaactaccgt ccccgatatt cccttcagag   1740

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attttcttcc attgacccat atttatacct ttcaggtact gaagatttaa taataataaa   1860

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gcatggaaat gcttttcaaa atatgatagc ggtcattatt ttgattgtgc cttactgaaa   1980

gtttttgggg aatttacaag agtactgatt acatgattat ctggagaaaa taagatgtct   2040

ttgaaataca tgttggcttc aagaaaacag ttttaacgtt ttcctaaaat gaaatctttt   2100

gaggtgagct tatggcatca acacatggtt gatgaggaag ctgagttgca ttagtgcaca   2160

tgatttccag tcaggtcatg ggaaatgaac agagacagtg acatctttgt agctgctcct   2220

ttgtgaggca cttctttctt gagatgactc catgcacaaa tataacaggg atcattggga   2280

atgacaccat cacagccacc aagnttattg ggttactgat aat                     2323
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<210>  37
<211>  307
<212>  PRT
<213>  Homo sapiens

<400>  37

Met Gln Ala Lys Tyr Ser Ser Thr Arg Asp Met Leu Asp Asp Asp Gly
1               5                   10                  15

Asp Thr Thr Met Ser Leu His Ser Gln Ala Ser Ala Thr Thr Arg His
                20                  25                  30

Pro Glu Pro Arg Arg Thr Glu His Arg Ala Pro Ser Ser Thr Trp Arg
        35                  40                  45

Pro Val Ala Leu Thr Leu Leu Thr Leu Cys Leu Val Leu Leu Ile Gly
    50                  55                  60

Leu Ala Ala Leu Gly Leu Leu Phe Phe Gln Tyr Tyr Gln Leu Ser Asn
65                  70                  75                  80

Thr Gly Gln Asp Thr Ile Ser Gln Met Glu Glu Arg Leu Gly Asn Thr
                85                  90                  95

Ser Gln Glu Leu Gln Ser Leu Gln Val Gln Asn Ile Lys Leu Ala Gly
            100                 105                 110

Ser Leu Gln His Val Ala Glu Lys Leu Cys Arg Glu Leu Tyr Asn Lys
        115                 120                 125
```

```
Ala Gly Gly Tyr Thr Arg Asn Met Val Pro Ala Ser Ala Ser Ser Glu
    130                 135             140
```

```
Ser Leu Arg Gln Leu Pro His Met Gly Glu Ser Ala Ala Ala His Arg
145                 150             155                 160
```

```
Cys Ser Pro Cys Thr Glu Gln Trp Lys Trp His Gly Asp Asn Cys Tyr
                165             170                 175
```

```
Gln Phe Tyr Lys Asp Ser Lys Ser Trp Glu Asp Cys Lys Tyr Phe Cys
            180                 185             190
```

```
Leu Ser Glu Asn Ser Thr Met Leu Lys Ile Asn Lys Gln Glu Asp Leu
            195                 200             205
```

```
Glu Phe Ala Ala Ser Gln Ser Tyr Ser Glu Phe Phe Tyr Ser Tyr Trp
    210                 215             220
```

```
Thr Gly Leu Leu Arg Pro Asp Ser Gly Lys Ala Trp Leu Trp Met Asp
225             230             235                 240
```

```
Gly Thr Pro Phe Thr Ser Glu Leu Phe His Ile Ile Ile Asp Val Thr
                245             250             255
```

```
Ser Pro Arg Ser Arg Asp Cys Val Ala Ile Leu Asn Gly Met Ile Phe
            260                 265             270
```

```
Ser Lys Asp Cys Lys Glu Leu Lys Arg Cys Val Cys Glu Arg Arg Ala
            275             280                 285
```

```
Gly Met Val Lys Pro Glu Ser Leu His Val Pro Pro Glu Thr Leu Gly
    290                 295             300
```

```
Glu Gly Asp
305
```

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<210>   38
<211>   2714
<212>   DNA
<213>   Homo sapiens
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agggacgaac ggagaagggg gagagagggg ggtccagtct cccctggccg agcatttttt     180

ttttggaagt cctaggactg atctccagga ccagcactct tctcccagcc cttagggtcc     240

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cctgagaaga aggccgggag ccaggggctt cggttccggc tggctggctt ccccaggaag     420

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ggctggaccc acagtgccaa atatggccct ggaacaggcc gcatctggct ggacaacttg     600

agctgcagtg ggaccgagca gagtgtgact gaatgtgcct cccggggctg ggggaacagt     660
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gactgtacgc acgatgagga tgctggggtc atctgcaaag accagcgcct ccctggcttc    720

tcggactcca atgtcattga ggtagagcat cacctgcaag tggaggaggt gcgaattcga    780

cccgccgttg ggtggggcag acgacccctg cccgtgacgg aggggctggt ggaagtcagg    840

cttcctgacg gctggtcgca agtgtgcgac aaaggctgga gcgcccacaa cagccacgtg    900

gtctgcggga tgctgggctt ccccagcgaa aagagggtca acgcggcctt ctacagaaag    960

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gcccaacggc agcaacactc ctttggtctg catggggtgg cgtgcgtggg cacggaggcc   1080

cacctctccc tctgttccct ggagttctat cgtgccaatg acaccgccag gtgccctggg   1140

gggggccctg cagtggtgag ctgtgtgcca ggccctgtct acgcggcatc cagtggccag   1200

aagaagcaac aacagtcgaa gcctcagggg gaggcccgtg tccgtctaaa gggcggcgcc   1260

caccctggag agggccgggt agaagtcctg aaggccagca catggggcac agtctgtgac   1320

cgcaagtggg acctgcatgc agccagcgtg gtgtgtcggg agctgggctt cgggagtgct   1380

cgagaagctc tgagtggcgc tcgcatgggg caggcatgg gtgctatcca cctgagtgaa   1440

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cactcagcac tggtgcagga accgcctac atcgaagacc ggcccctgca tatgttgtac   1980

tgtgctgcgg aagagaactg cctggccagc tcagcccgct cagccaactg gccctatggt   2040

caccggcgtc tgctccgatt ctcctcccag atccacaacc tgggacgagc tgacttcagg   2100

cccaaggctg ggcgccactc ctgggtgtgg cacgagtgcc atgggcatta ccacagcatg   2160

gacatcttca ctcactatga tatcctcacc ccaaatggca ccaaggtggc tgagggccac   2220

aaagctagtt tctgtctcga agacactgag tgtcaggagg atgtctccaa gcggtatgag   2280

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attgactgtc agtggattga catcacggat gtgaagccag gaaactacat tctccaggtt   2400

gtcatcaacc caaactttga agtagcagag agtgacttta ccaacaatgc aatgaaatgt   2460

aactgcaaat atgatggaca tagaatctgg gtgcacaact gccacattgg tgatgccttc   2520

agtgaagagg cccacaggag gtttgaacgc tccctggcc agaccagcac ctagattatg   2580
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taagtgccac tgccctttgc aaaccgcccc tggcgcctaa tggcaggggt ctgaggctgc   2640

cattacctca ggagcttatc aagaaaccca tgtcagcaac catgtattgc ggccgctcta   2700

gaggaatcgc cagc   2714

<210>   39
<211>   769
<212>   PRT
<213>   Homo sapiens

<400>   39

Met Arg Pro Val Ser Val Trp Gln Trp Ser Pro Trp Gly Leu Leu Leu
1   5   10   15

Cys Leu Leu Cys Ser Ser Cys Leu Gly Ser Pro Ser Pro Ser Thr Gly
                20   25   30

Pro Glu Lys Lys Ala Gly Ser Gln Gly Leu Arg Phe Arg Leu Ala Gly
            35   40   45

Phe Pro Arg Lys Pro Tyr Glu Gly Arg Val Glu Ile Gln Arg Ala Gly
        50   55   60

Glu Trp Gly Thr Ile Cys Asp Asp Asp Phe Thr Leu Gln Ala Ala His
65   70   75   80

Ile Leu Cys Arg Glu Leu Gly Phe Thr Glu Ala Thr Gly Trp Thr His
                85   90   95

Ser Ala Lys Tyr Gly Pro Gly Thr Gly Arg Ile Trp Leu Asp Asn Leu
                100   105   110

Ser Cys Ser Gly Thr Glu Gln Ser Val Thr Glu Cys Ala Ser Arg Gly
            115   120   125

Trp Gly Asn Ser Asp Cys Thr His Asp Glu Asp Ala Gly Val Ile Cys
    130   135   140

Lys Asp Gln Arg Leu Pro Gly Phe Ser Asp Ser Asn Val Ile Glu Val
145   150   155   160

Glu His His Leu Gln Val Glu Glu Val Arg Ile Arg Pro Ala Val Gly
                165   170   175

Trp Gly Arg Arg Pro Leu Pro Val Thr Glu Gly Leu Val Glu Val Arg
            180   185   190

Leu Pro Asp Gly Trp Ser Gln Val Cys Asp Lys Gly Trp Ser Ala His
            195   200   205

Asn Ser His Val Val Cys Gly Met Leu Gly Phe Pro Ser Glu Lys Arg
    210   215   220

Val Asn Ala Ala Phe Tyr Arg Lys Leu Arg Lys Arg Ala Ala Lys Val
225   230   235   240

Ser Ala Arg His Pro Lys Pro Leu Gly Arg Leu Leu Ala Gln Arg Gln
                245   250   255

Gln His Ser Phe Gly Leu His Gly Val Ala Cys Val Gly Thr Glu Ala

```
                260                      265                        270
His Leu Ser Leu Cys Ser Leu Glu Phe Tyr Arg Ala Asn Asp Thr Ala
        275              280              285

Arg Cys Pro Gly Gly Gly Pro Ala Val Val Ser Cys Val Pro Gly Pro
    290              295              300

Val Tyr Ala Ala Ser Ser Gly Gln Lys Lys Gln Gln Gln Ser Lys Pro
305              310              315                        320

Gln Gly Glu Ala Arg Val Arg Leu Lys Gly Gly Ala His Pro Gly Glu
            325              330                        335

Gly Arg Val Glu Val Leu Lys Ala Ser Thr Trp Gly Thr Val Cys Asp
            340              345              350

Arg Lys Trp Asp Leu His Ala Ala Ser Val Val Cys Arg Glu Leu Gly
        355              360              365

Phe Gly Ser Ala Arg Glu Ala Leu Ser Gly Ala Arg Met Gly Gln Gly
    370              375              380

Met Gly Ala Ile His Leu Ser Glu Val Arg Cys Ser Gly Gln Glu Leu
385              390              395                        400

Ser Leu Trp Lys Cys Pro His Lys Asn Ile Thr Ala Glu Asp Cys Ser
            405              410              415

His Ser Gln Asp Ala Gly Val Arg Cys Asn Leu Pro Tyr Thr Gly Ala
            420              425              430

Glu Thr Arg Ile Arg Leu Ser Gly Gly Arg Ser Gln His Glu Gly Arg
        435              440              445

Val Glu Val Gln Ile Gly Gly Pro Gly Pro Leu Arg Trp Gly Leu Ile
    450              455              460

Cys Gly Asp Asp Trp Gly Thr Leu Glu Ala Met Val Ala Cys Arg Gln
465              470              475                        480

Leu Gly Leu Gly Tyr Ala Asn His Gly Leu Gln Glu Thr Trp Tyr Trp
            485              490              495

Asp Ser Gly Asn Ile Thr Glu Val Val Met Ser Gly Val Arg Cys Thr
            500              505              510

Gly Thr Glu Leu Ser Leu Asp Gln Cys Ala His His Gly Thr His Ile
            515              520              525

Thr Cys Lys Arg Thr Gly Thr Arg Phe Thr Ala Gly Val Ile Cys Ser
    530              535              540

Glu Thr Ala Ser Asp Leu Leu His Ser Ala Leu Val Gln Glu Thr
545              550              555                        560

Ala Tyr Ile Glu Asp Arg Pro Leu His Met Leu Tyr Cys Ala Ala Glu
            565              570              575

Glu Asn Cys Leu Ala Ser Ser Ala Arg Ser Ala Asn Trp Pro Tyr Gly
            580              585              590

His Arg Arg Leu Leu Arg Phe Ser Ser Gln Ile His Asn Leu Gly Arg
```

```
            595                     600                     605

Ala Asp Phe Arg Pro Lys Ala Gly Arg His Ser Trp Val Trp His Glu
    610             615             620

Cys His Gly His Tyr His Ser Met Asp Ile Phe Thr His Tyr Asp Ile
625             630             635             640

Leu Thr Pro Asn Gly Thr Lys Val Ala Glu Gly His Lys Ala Ser Phe
            645             650             655

Cys Leu Glu Asp Thr Glu Cys Gln Glu Asp Val Ser Lys Arg Tyr Glu
        660             665             670

Cys Ala Asn Phe Gly Glu Gln Gly Ile Thr Val Gly Cys Trp Asp Leu
        675             680             685

Tyr Arg His Asp Ile Asp Cys Gln Trp Ile Asp Ile Thr Asp Val Lys
    690             695             700

Pro Gly Asn Tyr Ile Leu Gln Val Val Ile Asn Pro Asn Phe Glu Val
705             710             715             720

Ala Glu Ser Asp Phe Thr Asn Asn Ala Met Lys Cys Asn Cys Lys Tyr
            725             730             735

Asp Gly His Arg Ile Trp Val His Asn Cys His Ile Gly Asp Ala Phe
            740             745             750

Ser Glu Glu Ala His Arg Arg Phe Glu Arg Ser Pro Gly Gln Thr Ser
            755             760             765

Thr


<210>   40
<211>   1877
<212>   DNA
<213>   Homo sapiens

<400>   40
gtaggcactg tgcaaaacat actagtggat atagagatga ataagaaaaa gcccctgcac    60
tcaaagagct ctcggattca tcaacaaatt attgtgcagt tagatagcct ccctccacct   120
gtcttctcag agcaggtaat ggcaagcatg gctgccgtgc tcacctgggc tctggctctt   180
ctttcagcgt tttcggccac ccaggcacgg aaaggcttct gggactactt cagccagacc   240
agcggggaca aaggcagggt ggagcagatc catcagcaga gatggctcg cgagcccgcg   300
accctgaaag acagccttga gcaagacctc aacaatatga caagttcct ggaaaagctg   360
aggcctctga gtgggagcga ggctcctcgg ctcccacagg acccggtggg catgcggcgg   420
cagctgcagg aggagttgga ggaggtgaag gctcgcctcc agccctacat ggcagaggcg   480
cacgagctgg tgggctggaa tttggagggc ttgcggcagc aactgaagcc ctacacgatg   540
gatctgatgg agcaggtggc cctgcgcgtg caggagctgc aggagcagtt gcgcgtggtg   600
ggggaagaca ccaaggccca gttgctgggg ggcgtggacg aggcttgggc tttgctgcag   660
```

```
ggactgcaga gccgcgtggt gcaccacacc ggccgcttca aagagctctt ccacccatac      720

gccgagagcc tggtgagcgg catcgggcgc cacgtgcagg agctgcaccg cagtgtggct      780

ccgcacgccc ccgccagccc cgcgcgcctc agtcgctgcg tgcaggtgct ctcccggaag      840

ctcacgctca aggccaaggc cctgcacgca cgcatccagc agaacctgga ccagctgcgc      900

gaagagctca gcagagcctt tgcaggcact gggactgagg aaggggccgg cccggacccc      960

cagatgctct ccgaggaggt gcgccagcga cttcaggctt ccgccagga cacctacctg     1020

cagatagctg ccttcactcg cgccatcgac caggagactg aggaggtcca gcagcagctg     1080

gcgccacctc caccaggcca cagtgccttc gccccagagt ttcaacaaac agacagtggc     1140

aaggttctga gcaagctgca ggcccgtctg gatgacctgt gggaagacat cactcacagc     1200

cttcatgacc agggccacag ccatctgggg gacccctgag gatctacctg cccaggccca     1260

ttcccagctc cttgtctggg gagccttggc tctgagcctc tagcatggtt cagtccttga     1320

aagtggcctg ttgggtggag ggtggaaggt cctgtgcagg acagggaggc caccaaaggg     1380

gctgctgtct cctgcacatc cagcctcctg cgactcccca atctggatgc attacattca     1440

ccaggctttg caaacccagc ctcccagtgc tcatttggga atgctcatga gttactccat     1500

tcaagggtga gggagtaggg agggagaggc accatgcatg tgggtgatta tctgcaagcc     1560

tgtttgccgt gatgctggaa gcctgtgcca ctacatcctg gagtctgaca ctgagcccct     1620

gcgagtgacc gtgagcacac agttccgtag cggggcccat acgagactcg acgcgcgcgc     1680

accacgaggt cccgagggag gacactcgac ggacacgagt gacgggaaat gtgcatctac     1740

actagcgcgc gacagctaga gcgatgacgg cgaggacgtc tcgcagccta ccagcaacgc     1800

gaagacgtgc ctcccggcgt cgtatggatt aacaagctcc aagtagggtg tacaacgccg     1860

cagcatgaac tcccagg                                                    1877
```

<210> 41
<211> 400
<212> PRT
<213> Homo sapiens

<400> 41

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Met Asn Lys Lys Pro Leu His Ser Lys Ser Ser Arg Ile His Gln
1               5                   10                  15

Gln Ile Ile Val Gln Leu Asp Ser Leu Pro Pro Pro Val Phe Ser Glu
            20                  25                  30

Gln Val Met Ala Ser Met Ala Ala Val Leu Thr Trp Ala Leu Ala Leu
        35                  40                  45

Leu Ser Ala Phe Ser Ala Thr Gln Ala Arg Lys Gly Phe Trp Asp Tyr
    50                  55                  60

Phe Ser Gln Thr Ser Gly Asp Lys Gly Arg Val Glu Gln Ile His Gln
```

```
65                      70                      75                      80

Gln Lys Met Ala Arg Glu Pro Ala Thr Leu Lys Asp Ser Leu Glu Gln
                85                  90                  95

Asp Leu Asn Asn Met Asn Lys Phe Leu Glu Lys Leu Arg Pro Leu Ser
                100                 105                 110

Gly Ser Glu Ala Pro Arg Leu Pro Gln Asp Pro Val Gly Met Arg Arg
            115                 120                 125

Gln Leu Gln Glu Glu Leu Glu Glu Val Lys Ala Arg Leu Gln Pro Tyr
            130                 135                 140

Met Ala Glu Ala His Glu Leu Val Gly Trp Asn Leu Glu Gly Leu Arg
145                 150                 155                 160

Gln Gln Leu Lys Pro Tyr Thr Met Asp Leu Met Glu Gln Val Ala Leu
                165                 170                 175

Arg Val Gln Glu Leu Gln Glu Gln Leu Arg Val Val Gly Glu Asp Thr
            180                 185                 190

Lys Ala Gln Leu Leu Gly Gly Val Asp Glu Ala Trp Ala Leu Leu Gln
            195                 200                 205

Gly Leu Gln Ser Arg Val Val His His Thr Gly Arg Phe Lys Glu Leu
            210                 215                 220

Phe His Pro Tyr Ala Glu Ser Leu Val Ser Gly Ile Gly Arg His Val
225                 230                 235                 240

Gln Glu Leu His Arg Ser Val Ala Pro His Ala Pro Ala Ser Pro Ala
                245                 250                 255

Arg Leu Ser Arg Cys Val Gln Val Leu Ser Arg Lys Leu Thr Leu Lys
                260                 265                 270

Ala Lys Ala Leu His Ala Arg Ile Gln Gln Asn Leu Asp Gln Leu Arg
            275                 280                 285

Glu Glu Leu Ser Arg Ala Phe Ala Gly Thr Gly Thr Glu Glu Gly Ala
            290                 295                 300

Gly Pro Asp Pro Gln Met Leu Ser Glu Glu Val Arg Gln Arg Leu Gln
305                 310                 315                 320

Ala Phe Arg Gln Asp Thr Tyr Leu Gln Ile Ala Ala Phe Thr Arg Ala
                325                 330                 335

Ile Asp Gln Glu Thr Glu Glu Val Gln Gln Gln Leu Ala Pro Pro Pro
            340                 345                 350

Pro Gly His Ser Ala Phe Ala Pro Glu Phe Gln Gln Thr Asp Ser Gly
            355                 360                 365

Lys Val Leu Ser Lys Leu Gln Ala Arg Leu Asp Asp Leu Trp Glu Asp
            370                 375                 380

Ile Thr His Ser Leu His Asp Gln Gly His Ser His Leu Gly Asp Pro
385                 390                 395                 400
```

<210> 42

<211>   2128
<212>   DNA
<213>   Homo sapiens

<400>   42
gcaccggtcc ggaattcccg ggtcgacgat ttcgtctcaa cattcagcag aggccccaga   60

tcagcgtctg agccaggcca acaatgacca aggaggatgg gatcctgggt gcagctcatc   120

acaagcgtcg gggtgcagca aaaccatcca ggctggacag tggctggaca gttccaagaa   180

aagaaacgct tcactgaaga agtcattgaa tacttccaga agaaagttag cccagtgcat   240

ctgaaaatcc tgctgactag cgatgaagcc tggaagagat ttgtgcgtgt ggctgaattg   300

cccagggaag aggcagatgc tctctatgaa gctctgaaga atcttacacc atatgtgact   360

attgaggaca aagacatgca gcaaaaagaa cagcagttta gggagtggtt tttgaaagag   420

tttcctcaaa tcagatggaa gattcaggag tccatagaaa ggcttcgtgt cattgcaaat   480

gagattgaaa aggtccacag aggctgcgtc atcgccaatg tggtgtctgg ctccactggc   540

atcctgtctg tcattggcgt tatgttggca ccatttacag cagggctgag cctgagcatt   600

actgcagctg gggtagggct gggaatagca tctgccacgg ctgggatcgc ctccagcatc   660

gtggagaaca catacacaag gtcagcagaa ctcacagcca gcaggctgac tgcaaccagc   720

actgaccaat tggaggcatt aagggacatt ctgcatgaca tcacacccaa tgtgctttcc   780

tttgcacttg attttgacga agccacaaaa atgattgcga atgatgtcca tacactcagg   840

agatctaaag ccactgttgg acgccctttg attgcttggc gatatgtacc tataaatgtt   900

gttgagacac tgagaacacg tggggccccc acccggatag tgagaaaagt agcccggaac   960

ctgggcaagg ccacttcagg tgtccttgtt gtgctggatg tagtcaacct tgtgcaagac   1020

tcactggact tgcacaaggg ggcaaaatcc gagtctgctg agtcgctgag gcagtgggct   1080

caggagctgg aggagaatct caatgagctc acccatatcc atcagagtct aaaagcaggc   1140

taggcccaat tgttgcggga agtcagggac cccaaacgga gggactggct gaagccatgg   1200

cagaagaacg tggattgtga agatttcatg gacatttatt agttccccaa attaatactt   1260

ttataatttc ctatgcctgt ctttaccgca atctctaaac acaaattgtg aagatttcat   1320

ggacacttat cacttcccca atcaataccc ttgtgatttc ttatgcctgt ctttactttta   1380

atctcctaat cctgtcagct gaggaggatg tatgtcacct caggaccatg tgataattgc   1440

gttaactgca caaattgtag agcatgtgtg tttgaacaat atgaaatctg gcaccttga   1500

aaaaagaaca ggataacagc aattgttcag ggaataagag agataacctt aaactctgac   1560

caacagtgag ccgggtggaa cagagtcata tttctcttct ttcaaaagca aatgggagaa   1620

atatcgctga attctttttc tcagcaagga acatccctga gaaagagaat gcacccctga   1680

gggtgggtct ataaatggcc tccttgggtg tggccatctt ctatggtcga gactgtaggg   1740

```
atgaaataaa ccccagtctc ccatagtgct cccaggctta ttaggaagag gaaattcccg   1800

cctaataaat tttggtcaga ccggttgctc tcaaaaccct gtctcctgat aagatgttat   1860

caatgacaat ggtgcctgaa acctcattag caattttaat ttctccccgg tcctgtggtc   1920

ctgtgatctc accctgcctc cacttgcctt gtgatattct attaccttgt gaagtaggtg   1980

atctttgtga cccacaccct attcatacac tccctcccct tttgaaagtc cctaataaaa   2040

acttgctggt tttgcagctt gtgaggcatc acggaaccta ctgatgtgtg atgtctcccc   2100

tggacaccta gctttaaaat ttcaaaaa                                       2128
```

<210> 43
<211> 348
<212> PRT
<213> Homo sapiens

<400> 43

```
Met Gly Ser Trp Val Gln Leu Ile Thr Ser Val Gly Val Gln Gln Asn
1               5                   10                  15

His Pro Gly Trp Thr Val Ala Gly Gln Phe Gln Glu Lys Lys Arg Phe
            20                  25                  30

Thr Glu Glu Val Ile Glu Tyr Phe Gln Lys Lys Val Ser Pro Val His
        35                  40                  45

Leu Lys Ile Leu Leu Thr Ser Asp Glu Ala Trp Lys Arg Phe Val Arg
    50                  55                  60

Val Ala Glu Leu Pro Arg Glu Glu Ala Asp Ala Leu Tyr Glu Ala Leu
65                  70                  75                  80

Lys Asn Leu Thr Pro Tyr Val Thr Ile Glu Asp Lys Asp Met Gln Gln
                85                  90                  95

Lys Glu Gln Gln Phe Arg Glu Trp Phe Leu Lys Glu Phe Pro Gln Ile
            100                 105                 110

Arg Trp Lys Ile Gln Glu Ser Ile Glu Arg Leu Arg Val Ile Ala Asn
            115                 120                 125

Glu Ile Glu Lys Val His Arg Gly Cys Val Ile Ala Asn Val Val Ser
    130                 135                 140

Gly Ser Thr Gly Ile Leu Ser Val Ile Gly Val Met Leu Ala Pro Phe
145                 150                 155                 160

Thr Ala Gly Leu Ser Leu Ser Ile Thr Ala Ala Gly Val Gly Leu Gly
                165                 170                 175

Ile Ala Ser Ala Thr Ala Gly Ile Ala Ser Ser Ile Val Glu Asn Thr
                180                 185                 190

Tyr Thr Arg Ser Ala Glu Leu Thr Ala Ser Arg Leu Thr Ala Thr Ser
            195                 200                 205

Thr Asp Gln Leu Glu Ala Leu Arg Asp Ile Leu His Asp Ile Thr Pro
    210                 215                 220
```

```
Asn Val Leu Ser Phe Ala Leu Asp Phe Asp Glu Ala Thr Lys Met Ile
225             230             235             240

Ala Asn Asp Val His Thr Leu Arg Arg Ser Lys Ala Thr Val Gly Arg
            245             250             255

Pro Leu Ile Ala Trp Arg Tyr Val Pro Ile Asn Val Val Glu Thr Leu
            260             265             270

Arg Thr Arg Gly Ala Pro Thr Arg Ile Val Arg Lys Val Ala Arg Asn
        275             280             285

Leu Gly Lys Ala Thr Ser Gly Val Leu Val Val Leu Asp Val Val Asn
        290             295             300

Leu Val Gln Asp Ser Leu Asp Leu His Lys Gly Ala Lys Ser Glu Ser
305             310             315             320

Ala Glu Ser Leu Arg Gln Trp Ala Gln Glu Leu Glu Glu Asn Leu Asn
            325             330             335

Glu Leu Thr His Ile His Gln Ser Leu Lys Ala Gly
            340             345
```

```
<210>   44
<211>   988
<212>   DNA
<213>   Homo sapiens

<220>
<221>   misc_feature
<223>   n = a or c or g or t


<220>
<221>   CDS
<222>   (129)..(971)

<400>   44
agagctgccg gngnnnnaat ggatagaata ctcttgacca nngacgcacg agcctgaact      60

agctcacagt agcccggcgg cccagggcaa tccgaccaca tttcactctc accgctgtag     120

gaatccag atg cag gcc aag tac agc agc acg agg gac atg ctg gat gat      170
         Met Gln Ala Lys Tyr Ser Ser Thr Arg Asp Met Leu Asp Asp
         1               5                   10

gat ggg gac acc acc atg agc ctg cat tct caa gcc tct gcc aca act      218
Asp Gly Asp Thr Thr Met Ser Leu His Ser Gln Ala Ser Ala Thr Thr
15              20              25              30

cgg cat cca gag ccc cgg cgc aca gtt ttt cag tac tac cag ctc tcc      266
Arg His Pro Glu Pro Arg Arg Thr Val Phe Gln Tyr Tyr Gln Leu Ser
            35              40              45

aat act ggt caa gac acc att tct caa atg gaa gaa aga tta gga aat      314
Asn Thr Gly Gln Asp Thr Ile Ser Gln Met Glu Glu Arg Leu Gly Asn
        50              55              60

acg tcc caa gag ttg caa tct ctt caa gtc cag aat ata aag ctt gca      362
Thr Ser Gln Glu Leu Gln Ser Leu Gln Val Gln Asn Ile Lys Leu Ala
        65              70              75
```

```
gga agt ctg cag cat gtg gct gaa aaa ctc tgt cgt gag ctg tat aac      410
Gly Ser Leu Gln His Val Ala Glu Lys Leu Cys Arg Glu Leu Tyr Asn
    80              85              90

aaa gct gga ggc tat aca aga aac atg gtg cca gca tct gct tct tct      458
Lys Ala Gly Gly Tyr Thr Arg Asn Met Val Pro Ala Ser Ala Ser Ser
95                  100             105                 110

gag agc ctc agg cag ctt cca cac atg ggg gaa agt gca gca gca cac      506
Glu Ser Leu Arg Gln Leu Pro His Met Gly Glu Ser Ala Ala Ala His
                115             120             125

agg tgc agc cct tgt aca gaa caa tgg aaa tgg cat gga gac aat tgc      554
Arg Cys Ser Pro Cys Thr Glu Gln Trp Lys Trp His Gly Asp Asn Cys
            130             135             140

tac cag ttc tat aaa gac agc aaa agt tgg gag gac tgt aaa tat ttc      602
Tyr Gln Phe Tyr Lys Asp Ser Lys Ser Trp Glu Asp Cys Lys Tyr Phe
            145             150             155

tgc ctt agt gaa aac tct acc atg ctg aag ata aac aaa caa gaa gac      650
Cys Leu Ser Glu Asn Ser Thr Met Leu Lys Ile Asn Lys Gln Glu Asp
    160             165             170

ctg gaa ttt gcc gcg tct cag agc tac tct gag ttt ttc tac tct tat      698
Leu Glu Phe Ala Ala Ser Gln Ser Tyr Ser Glu Phe Phe Tyr Ser Tyr
175             180             185                 190

tgg aca ggg ctt ttg cgc cct gac agt ggc aag gcc tgg ctg tgg atg      746
Trp Thr Gly Leu Leu Arg Pro Asp Ser Gly Lys Ala Trp Leu Trp Met
                195             200             205

gat gga acc cct ttc act tct gaa ctg ttc cat att ata ata gat gtc      794
Asp Gly Thr Pro Phe Thr Ser Glu Leu Phe His Ile Ile Ile Asp Val
            210             215             220

acc agc cca aga agc aga gac tgt gtg gcc atc ctt aat ggg atg atc      842
Thr Ser Pro Arg Ser Arg Asp Cys Val Ala Ile Leu Asn Gly Met Ile
            225             230             235

ttc tca aag gac tgc aaa gaa ttg aag cgt tgt gtc tgt gag aga agg      890
Phe Ser Lys Asp Cys Lys Glu Leu Lys Arg Cys Val Cys Glu Arg Arg
    240             245             250

gca gga atg gtg aag cca gag agc ctc cat gtc ccc cct gaa aca tta      938
Ala Gly Met Val Lys Pro Glu Ser Leu His Val Pro Pro Glu Thr Leu
255             260             265                 270

ggc gaa ggt gac atg cat cat cat cat cat cat tagcctaggt tctagac      988
Gly Glu Gly Asp Met His His His His His His
                275             280
```

<210> 45
<211> 281
<212> PRT
<213> Homo sapiens

<220>
<221> misc_feature
<223> n = a or c or g or t

<400> 45

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Met Gln Ala Lys Tyr Ser Ser Thr Arg Asp Met Leu Asp Asp Asp Gly
1             5                 10              15

Asp Thr Thr Met Ser Leu His Ser Gln Ala Ser Ala Thr Thr Arg His
             20                 25              30

Pro Glu Pro Arg Arg Thr Val Phe Gln Tyr Tyr Gln Leu Ser Asn Thr
             35              40                 45

Gly Gln Asp Thr Ile Ser Gln Met Glu Glu Arg Leu Gly Asn Thr Ser
    50              55                 60

Gln Glu Leu Gln Ser Leu Gln Val Gln Asn Ile Lys Leu Ala Gly Ser
65              70                 75                 80

Leu Gln His Val Ala Glu Lys Leu Cys Arg Glu Leu Tyr Asn Lys Ala
                85                 90                 95

Gly Gly Tyr Thr Arg Asn Met Val Pro Ala Ser Ala Ser Ser Glu Ser
             100             105                110

Leu Arg Gln Leu Pro His Met Gly Glu Ser Ala Ala Ala His Arg Cys
        115                 120                 125

Ser Pro Cys Thr Glu Gln Trp Lys Trp His Gly Asp Asn Cys Tyr Gln
    130             135                 140

Phe Tyr Lys Asp Ser Lys Ser Trp Glu Asp Cys Lys Tyr Phe Cys Leu
145             150                 155                 160

Ser Glu Asn Ser Thr Met Leu Lys Ile Asn Lys Gln Glu Asp Leu Glu
             165                 170                 175

Phe Ala Ala Ser Gln Ser Tyr Ser Glu Phe Phe Tyr Ser Tyr Trp Thr
             180             185                 190

Gly Leu Leu Arg Pro Asp Ser Gly Lys Ala Trp Leu Trp Met Asp Gly
        195             200                 205

Thr Pro Phe Thr Ser Glu Leu Phe His Ile Ile Ile Asp Val Thr Ser
    210             215                 220

Pro Arg Ser Arg Asp Cys Val Ala Ile Leu Asn Gly Met Ile Phe Ser
225             230                 235                 240

Lys Asp Cys Lys Glu Leu Lys Arg Cys Val Cys Glu Arg Arg Ala Gly
             245                 250                 255
```

```
Met Val Lys Pro Glu Ser Leu His Val Pro Pro Glu Thr Leu Gly Glu
            260                 265                 270

Gly Asp Met His His His His His His
        275                 280
```